JOURNAL OF GAS LIGHTING, WATER SUPPLY, &c.

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EDITORIAL NOTES—GAS, &c.

A Popular Advertisement for Gas.

THE support given in last week's issue to the appeal to gas undertakings for funds for the Gas Section of the Franco-British Exhibition has been followed by the foreshadowed circular-letter from Mr. H. E. Jones and Mr. James W. Helps on behalf of the Committee. On the back of the circular will be found the list of the gas undertakings that have already subscribed to the fund. The total sum so far contributed is £3009, which is just about half the amount required to make the best of the scheme for a popular advertisement for gas at the exhibition. It will be observed that of the £3009, the London and Suburban Gas Companies have contributed no less than £2300, and about £700 has been subscribed by provincial undertakings. If a few more of the Suburban undertakings would subscribe £700, and so give half the total sum required, and the numerous undertakings in the Provinces would divide among them the contribution of a further £2300, what is now wanted would be quickly and happily accomplished. The £2300 is not a considerable sum in view of the number of provincial undertakings; and if contribution was made according to rank in point of magnitude, it would not require what could be viewed as a really substantial sum from any one concern to make up the amount. The list of subscribers to date is published in another part of this issue [p. 758]; and we shall be pleased to aid the Committee in the collection of further funds by (if desired) publishing the additions to the list week by week.

Supplementing the information given in our last issue, it may be stated that arrangements have already been made for the erection of a fine set of apartments, containing all the rooms usual in a first-class house, including a laundry. Industrial shops are also being planned, in which demonstrations will be given of the many efficient and economical ways in which gas is used in connection with the various industries. This should open the purse-strings of the influential gas undertakings in industrial areas. In all that is done, the Committee's idea is to show examples of the very best of the various methods of employing gas, whether for domestic, industrial, or public purposes; and the best of anything is always just as available to the public as the worst, and the intermediate between the extremes. This does not mean that the Committee are going to attempt to make a comprehensive display of all the appliances that stand high in estimation for excellence; their scheme is only to be a striking sampler of good result and effect. It will appeal to all managements of gas undertakings, with local authorities in their areas desirous of learning more of public lighting economy and efficiency, to hear that a large proportion of the grounds and other parts of the exhibition is to be illuminated with high-pressure, self-intensifying, and ordinary incandescent lighting. There is promise of previous displays of high-pressure gas-lighting (magnificent as they were) being excelled on this occasion, in both illuminating power and low costs. Therefore in this direction will be found one of the most attractive features of the gas display. Regarding the illustrative demonstration within the Machinery Hall, the work of erecting the rooms has already been let; and the contractors express their determination to spare no pains in making the buildings a decided feature of the exhibition. Those gas undertakings that are willling to help the Committee with funds should do so promptly; for the sooner the latter know the total sum with which they will have to deal, and which they intend to expend to the best possible advantage, the sooner will they be in a position to further develop their plans.

Tortious Legislation—Co-Partners and the Rights of Industrial Workers.

THE campaign against the Mines (Eight Hours) Bill has been spreading, and is being conducted with a vigour that is creating some uneasiness among those who are responsible for the measure, which, in the opinion of all authorities who can bring a rational mind, free from political bias, to bear on the question, will, if passed, be subversive of the best interests of the country. Not only in connection with this but other projects, the Government are proceeding in a manner that is raising against them the hand of every man who declines to sacrifice to party all liberty of thought and action. Private interests and enterprise, and the commercial and financial stability of the country, are being menaced on all sides by some of the legislative proposals at present before Parliament—all of them the outcome of purely sectional or fanatic desire, and all supported by nothing better than the subtle arguments of inordinate selfishness, or the tenets of the extremists, whose utter contempt for views fashioned by the trained mind and by daily practice and experience is one of the wonders of the age. To these unfortunately the Government have lent an all too willing ear. But the storm of indignation, general and vehement, that they have created throughout the country by their inherently bad and unjust projects has caused them—not at present to abandon their offensive injury-dealing measures, but to pull themselves up smartly in their march with the Socialists and spoliators before reaching such lengths as a universal eight-hours day, as proposed by Mr. Clynes in the House last Wednesday, and compulsory finding of work for all who, through misfortune or bad trade, are unemployed. Yet with their attacks on enterprise and industry, and their activity in "filling the cup" of the poor, the thrifty, and the investor alike, by creating unnecessary additions to the expense of existence, and by depreciating, by direct and indirect means, the value of investments, the professions of the Government are diametrically opposed to the effects of their acts. Only the other night, Mr. Winston Churchill was declaring that he distrusts profoundly the positive intervention of Governments—particularly party Governments—in the delicate and intricate world-wide operations of trade. "They do not "understand it." Truer words were surely never spoken. Mr. Churchill also protested against any destruction of productive energy by legislation; and he gave it as his settled opinion that the intervention of Government in regard to trade must be mainly of a liberating character. Then why the Miners' Eight Hours Bill? The Under-Secretary for the Colonies can hardly support the Bill after such a pronouncement of opinion. There is not a trace of anything of a liberating character to be found in it; but in its primary design and in its potential effects upon industry, commerce, and finance, there is nothing but unjustifiable and mischievous confinement, which will materially reveal itself in increased cost of production and the consequential increase in market prices, in the reduction of the purchasing power of the people, and in extended unemployment.

Industry intends to be heard with no uncertain voice over this matter. Following the deputations to the Home Secretary, a meeting (the like of which has rarely been seen in its representative industrial character) protesting against the measure was held in the City last Tuesday; and the gas industry and the consumers had their protest voiced by Sir George Livesey, who also voluntarily spoke for those inarticulate domestic coal consumers who have no organization to defend their interests. There is nothing irregular in the conjunction in representation of the gas industry and the small coal consumer. There is no industry that has such an affinity as the gas industry—through investment in, and custom under, the prepayment gas system—with the poorer

section of the community. No single purveyor of other forms of lighting agents, no single retailer of coal, can claim in these days such business relationships with the middle and working classes as the gas undertaking in every locality. What Sir George told this influential meeting in the City as to what would be imposed by a permanent increase of 1s. 6d. per ton in the price of coal on the consumers of the one commodity gas, was very similar to the striking information he recently laid before the Home Secretary. It all resolves itself into this, that, in the event of such an increase in the cost of raw material, the price of gas must be at least 2d. per 1000 cubic feet more than would otherwise be the case. In other words—the fact cannot be too frequently emphasized—the 6 million gas consumers of the United Kingdom would be called upon to pay annually at the least 1¾ millions sterling more for their gas than they would do if the cost of coal was not thus unnecessarily increased; and gas is only one of many commodities that would be similarly affected. The capital expenditure of the industry would also be increased by the additional cost (produced by dearer fuel) of the other manufactured materials and goods that have to be bought.

Such financial effects as these are accompanied by others no less important. In our comments upon the Bill a fortnight ago, an attempt was made to show that while the plausible purpose of the Bill was the absorption of unemployed by shortening the hours of labour of existing miners, the Bill would actually create unemployment. Yet another illustration of this was given at the City meeting. The Chairman of the London Chamber of Commerce (Mr. C. Charleton) is associated with the cement-making industry, in which the coal and coke used as fuel represent about one-third the cost of manufacture. Should the Bill pass, he considers cement would be increased in price about 1s. a ton; but, in the face of foreign competition, to make such an advance would be almost suicidal. In this case, the increased cost of production, without the possibility of recovering that increase, would tend to the restriction of manufacture; and restriction of manufacture means that an enormous number of men employed in the trade would be thrown out of employment. This is a significant statement, and applies to only one of several industries exposed to foreign competition. It is, to say the least, a singular and quixotic proposal for a Free Trade Government to attempt to deal with unemployment by increasing the producing costs of home industry. Again, Lord Claud Hamilton, as Chairman of the Great Eastern Railway Company, asserts that any permanent increase in the cost of fuel will compel the Company to make serious reductions in their staffs. So far the Government have, in the light of day, treated as groundless these fears as to financial and employment hardships; but surely in the background there must be a feeling that the men who are taking leading parts in this agitation against the Bill are not of a type who would move in the matter with the seriousness that is being evinced on all sides without some substantial cause and reason. The City meeting was a notable one; and a resolution was passed strongly urging the Government not to proceed further with the Bill. A similar resolution was also passed at the conference of the Associated Chambers of Commerce last week, at which Sir Joseph Bellamy, Chairman of the Plymouth Gas Company, also pointed out the fell effects that the Bill would have on the gas industry and the consumers of gas for light, fuel, and power.

As we have before said we say again, this is not a political question, but a national one; and day by day it becomes more apparent that what is necessary now is the dissemination among the people of expert opinions as to the true effects of the Bill if passed into law. The Government, it is obvious, will only be moved by the most potent force that can be brought to bear upon them by the strenuous exertions of all who believe the country will be injuriously affected by the measure. That the Government are trying to maintain an inflexible attitude is seen when we find Mr. Herbert Samuel, the Under-Secretary for the Home Department—Mr. Gladstone's deputy—ridiculing, in his speech on Mr. Clynes' Universal Eight Hours Bill, the estimates of experts as to the effects of the limitation of the hours of work in coal mines. He described the estimates as "fantastic" and "absurd exaggeration." We do not know that Mr. Samuel has the right of any superior knowledge to fling such epithets in the faces of those who, from a living connection with coal and industry, have made the most careful calculations as to the issues involved in the prescription of a reduced legal working day in coal mines. But this we do say, that the figures quoted by Mr. Samuel are altogether opposed to the statistics cited by the Commission who made scrupulous inquiry into the whole question, so far as it was possible; and if his figures are correct, then the stronger is the reason for opposition. Mr. Balfour described the speech made by the Under Secretary for the Home Department as a "curious" one; it was also singularly contradictory.

But with all the desire of the Government to comply with the behests of the miners, it cannot be part of their business to antagonize workers in other industries, who, in the matter of votes (which are at the bottom of unnecessary class legislation) and in the swaying of the fortunes of political parties are as powerful as the coal miners. When industrial workers find their livelihood is in any way jeopardized by class legislation, they will want to know why they should suffer, and will soon show their inimical side to those who are the active cause. This is a new, unexpected, but actual terror for the Government; and it has raised its head at Peckham, where a by-election is to be decided to-day. The gas workers of the South Metropolitan Gas Company constitute a force not to be lightly regarded in an election of this kind. The gas-working residents in the constituency are, we believe, some 1200 strong; and the Radical candidate last week had his peace of mind greatly disturbed by the determined attitude of this body of irreconcilables to the Coal Mines (Eight Hours) Bill. They and their families live by an industry in which coal is the main raw material; they are shareholders in that industry; and they are consumers of gas, coal, and coke. The raising of the men to the ranks of property owners has caused them to see things in a new light; and their action on this occasion is one of the most effective illustrations yet presented for the enlightenment of the country of how the partnership of the worker in the fruits of industry will positively dam the extravagant and impossible ideals of modern advanced Socialism. These gas-working electors in the Peckham constituency fail to see why a well-paid class of labour, working fewer hours in a week than they, and quite as well able to take care of themselves, should obtain any special legislation which will increase the price of gas, and, under the sliding-scale, damage the earning power of the gas workers' own property—seeing that an increase of 2d. in the price of gas will reduce the bonus distributed among them by no less than £7500 a year. The gas workers living in Peckham are by their action fighting not only for themselves, but for all gas undertakings—for, in fact, all industrial concerns that have adopted co-partnership or profit-sharing. They are by their action defending the freedom of labour, defending thrift, their right to make the fullest possible old-age provision from the fruits of their own labour, and the enjoyment of their share of profit under the ordinary conditions of trading, and fighting to protect themselves and their families from what is nothing, under the circumstances, but sheer robbery. Co-partnership has introduced at Peckham a new phase in our political life. Better for the country, better for industry, better for us all, if this protective influence expands, as it will surely expand by proper method among the working class. We hope to-day's voting will show that the gas workers of Peckham have succeeded in helping to dig the grave for the Coal Mines (Eight Hours) Bill.

The Vertical Retort in the Commercial Stage.

An event in the technical history of the gas industry of this country is the active entry of the vertical retort into the commercial stage; and such an event is worthy of special notice. The first of the systems to claim consideration and favour is the Dessau; and in another part of this issue, there appears an announcement from the Company, setting forth the claimed advantages, and the extent of the adoption of the system in Germany and other countries. The advantages are stated with greater brevity than they have been in description and controversy hitherto, and therefore can be ascertained at a glance. To many gas practitioners, the number of installations that have been made, and the degree of their importance, will come somewhat as a surprise. The installations, generally speaking, are not by any means small; and they indicate a very substantial confidence in the system among Continental professional friends. The system has been in use for some time at sixteen different works—the two smallest installations being eight and ten retorts, and the largest (Cologne) 240; and none of the intermediate settings are of less than thirty retorts. In this group of installations the total number of retorts

is 1138. At eleven works, installations are also under construction, equalling in the aggregate 742 retorts. The two groups make a total number of 1880 retorts. The retorts at the Oberspree and Mariendorf works of the Imperial Continental Gas Association (204 in all, constructed and under construction) are of the 5-metre length; and the balance—1676 retorts—are, we believe, entirely of the 4-metre length. If we use the figures as to the make of gas per retort per day as quoted for the 4 and 5 metre lengths in Table VI. of Herr Körting's article in the "JOURNAL" for Jan. 14—viz., 14,056 cubic feet for the 4-metre retorts and 14,974 for the 5-metre retorts—it is found that the 4-metre retort installations in existence and now being erected equal a daily production of 23,557,856 cubic feet of gas, and the 5-metre ones 3,054,696 cubic feet—together 26,612,552 cubic feet. On such figures, there is no gainsaying a considerable and varied experience, which will without doubt be added to ere long under British conditions—several gas engineers having, we hear, been on personal inspection struck above all else with the simplicity of the working and the small amount of labour required. Although above it is stated that Cologne has the largest installation in respect of the number of retorts, with the additional settings now under construction at Mariendorf, the Berlin works of the Imperial Continental Gas Association will soon boast a total 1020 metres of retort length, as against 960 metres at Cologne.

Surveyor as "Gas Engineer."

AT the moment, there appears some difficulty in finding openings in the gas industry for the numerous young men who have been specializing for gas engineering; and if all the local authorities who own gas-works were to follow the example of the Leigh-on-Sea District Council, the openings for trained men in the gas industry would become still further curtailed. The Council have confided to their Surveyor (Mr. John W. Liversedge) the carrying out of a scheme of gas-works extension; and he has entered upon his task by addressing a letter to certain gas-plant firms asking for some comprehensive information. In the letter he says: "The question of plant and appliances is now under my consideration, and as you are makers of gas plant, I shall be obliged," &c. It is no reflection on Mr. Liversedge in his proper sphere of professional work to say that, unless he has had special training in gas engineering and management, we question entirely the policy of the Council in amalgamating (if the indications of the circular-letter to gas-works plant contractors are correct) the departments of Town Surveyor and Gas Engineer. A qualified and up-to-date gas engineer and manager would not have found it necessary to beg for the information desired by Mr. Liversedge. He says that his Council have given him instructions to prepare the plans and specifications for the extension of the gas-works; and he mentions the nature of the extensions—among them being additional "retorts, regenerative type." He also gives the annual and maximum daily and hourly makes of gas. Proceeding, he asks for particulars in regard to all or any of the plant specified in the letter.

We take it that if any firms respond, Mr. Liversedge will, from information received, proceed to comply with the instructions of the Council to prepare plans and specifications. His requirements, however, are substantial ones, and cannot be properly fulfilled without considerable trouble and expense to the contractors. Gas-plant makers already find their drawing and estimating departments extremely costly parts of their business, through the generous demands made upon them. In tendering, they have, of course, to run the ordinary risks of traders; but a system has grown up in connection with the gas industry that we must say is proving very onerous to them. Here it is not even an ordinary case of tendering for a part or the whole of the extensions; but a request for the supply of particulars on which a scheme is to be developed. The chances are that it will be found, for a comparatively small works of this kind, cheaper to place the entire contract with one firm; and in that event the whole of the work of the other contractors in assisting Mr. Liversedge in his preliminary labours of planning the extensions by supplying this information, will be wasted. There is another point. If Mr. Liversedge has not been trained as a gas engineer, and has not had a gas plant under his personal management for any lengthened period, and kept himself posted with recent progress, we fail to see wherein is his competence to judge of the plant that will best and most economically serve the interests of Leigh-on-Sea. The shortest cut to complete satisfaction for the Council would have been (instead of adopting the penny wise and pound foolish policy) to have put the work of extension in the hands of a fully qualified gas engineer, for the preparation of plans and specifications, and then to have invited tenders in the customary way. The best manner of assisting the Leigh-on-Sea District Council to fully appreciate what the circular-letter suggests is their mistake, would be for all the contractors applied to to decline the information asked for by Mr. Liversedge; and we say this without in any way desiring to be personally offensive to that gentleman.

The Gas Coal Federation.

IT is extremely kind and thoughtful of a body calling themselves the Gas Coal Federation to evince such a devoted interest as they are doing at present in the affairs of their large and constant customers, with the view of compelling those customers to pay a price showing only a drop of 1s. per ton on last year's contract prices, or 2s. or 2s. 6d. per ton above those of 1906. In last week's issue there were two references to this Gas Coal Federation and their interesting proposals. It will have been gathered from those references that the "Iron and Coal Trades Review"—the official organ of the National Association of Colliery Managers—confers upon gas companies the honourable business attribute of being "wily and cautious." That, we take it, is the view of the Gas Coal Federation; and, if it is so, there is no necessity to look far afield for the foundation of their very existence. But it is evident from the resolutions passed by the Federation that their existence is an excellent cause for the exercise of even greater vigilance on the part of the administrations of gas undertakings; and there is no reason why combination should not be met by combination for still stronger and more effective action. The treating of gas coal individually to a Federation is a pretty clear indication of the appreciation by those interested in its sale of the power of gas-works undertakings as buyers even in their separate capacity; and the respect of the Federation for the gas industry might be immensely enhanced by a combination of undertakings.

Gas managements are now credited with playing a waiting game; and it is, we are assured, to "defeat their machinations" that the Gas Coal Federation [by the way, has the "Iron and Coal Trades Review" merely found a new name for the old Gas Coal Association?] are now taking the somewhat humorous action of proposing to insist on a 2s. to 2s. 6d. higher price per ton than the contract rates ruling in 1906, and to include in contracts the 1s. 6d. increase clause that is intended to become operative in the event of the Mines (Eight Hours) Bill becoming law. The price proposed by the Federation for gas coal is manifestly absurd in view of the reversal of the trade, and the decline in the export, conditions that existed last year, and which gave the colliery owners the whip hand. Federation or no federation, the colliery owners cannot expect to perpetually rule the position without receiving a severe challenge, followed by action if necessary, which, in the present instance, we venture to think, would effectually dislodge some, if not all, of the members of the Federation from their pedestals. It will not be a very difficult matter to track the membership of the Federation; nor yet a difficult matter for the gas undertakings to buy to the fullest extent possible outside the Federation. And orders for coal that may have to be placed within the Federation could be so given that certain of the constituent parties would find it an advantage to be again free lances and not co-operators in a combination whose leading "machination" is the maintenance of factitious prices to a customer not unworthy of their esteem. Effective ways and means have been found in the past for breaking up rings and combinations; and those ways and means are far from the stage of exhaustion.

Loans and Wages of Permanent Workmen.

The Sheffield City Council have not been disposed to accept without argument the stipulation imposed upon them recently by the Local Government Board, when sanctioning loans for various purposes, that no part of the amounts authorized should be applied to the payment of wages of workmen permanently employed by the Corporation. Last December, as was noticed in the "JOURNAL" at the time (see p. 762), at an inquiry held by

Mr. F. H. Tulloch, as to an application by the Council to borrow a sum for street improvement purposes, the Inspector asked that the Council would give an undertaking not to do the work with their permanent staff; and in a letter to the Board afterwards, the Town Clerk pointed out that such an undertaking was "with considerable hesitancy, and after demur, given by their representatives on behalf of, but without the authority or concurrence of, the Council." At the same inquiry, the Inspector, with reference to another sum required for sewerage work, strongly advocated that the job should be let by contract. Under these circumstances, the Town Clerk said he was instructed to inquire (1) whether the Inspector, in suggesting contract work, was acting in harmony with the Board's instructions, and (2) whether in future the Board were not prepared to sanction loans to the corporation of a city of the size and importance of Sheffield for the carrying out of work of the class already referred to by workmen in their permanent employ. He added that the real point on which the Council desired information was whether the wages of permanent workmen employed in the execution of public works carried out by means of borrowed money could properly be defrayed out of loans sanctioned by the Board. After stating that in Sheffield the view was strongly held (based upon experience) that the employment of their own trained men on work of the character referred to was the most satisfactory course, and that letting jobs by contract was in some cases not the best method of procedure, the Town Clerk expressed the opinion of the Council "that the Board's Inspectors have no right in a great municipality like this to discuss or dictate as to the policy the Council shall adopt in the execution of their public work." The Board's reply has now been received; and it does not deal with the point as to the "rights of the Inspectors." To the two questions categorically put, however, answers are given. With regard to the payment of permanent workmen out of loans, the Council are simply referred to the circular already issued by the Board in condemnation of this; while as to the second matter, the Board say they have no desire whatever to recommend that in ordinary circumstances work should be let out to contract by local authorities rather than be carried out by the direct employment of labour. In the present case (as well as a previous one), however, the estimate seemed rather high; and it was "with a view to obtaining reliable evidence of what the cost should be that the Inspector suggested that some part of the work should be let to contract." Speaking generally, an occasional check of this kind would not seem to be altogether amiss, in order to ensure expenditure being kept down.

Many of our readers are aware that Sir Chandos Leigh, K.C., one of the Directors of the Imperial Continental Gas Association, has retired from the position of Speaker's Counsel. We are pleased to learn that he has been presented by Sir Theodore Martin, on behalf of the Parliamentary Agents, with a gold watch, as a mark of their esteem.

At a recent meeting of the Chesterfield Rural District Council, the present Engineer, Mr. John Frith, was appointed Consulting Engineer, and his son, Mr. Gilbert Frith, as his successor. Mr. John Frith is to advise on all matters of capital expenditure and generally as to the working of the water scheme; and Mr. Gilbert Frith is to reside in Chesterfield, and devote all his time to the work of the Council.

The water supply of Dawson in the Yukon territory has to be warmed before it is pumped. The ground is frozen throughout the year, except for the top 2 or 3 feet during the summer; and consequently the water in the mains would freeze were not some means taken to prevent it. This preventive consists of turning exhaust steam from the pumps and extra steam from the boilers into the supply, which is thereby warmed sufficiently for the purpose.

The Public Control Committee of the London County Council will report to-day that they have had under consideration the desirability of carrying out a series of experiments with gas under known conditions with the Council's experimental plant, and also with gas supplied by the Companies. They consider that the increasing use of gas as a source of heat, and the modification of its use as an illuminant, involved in the very wide use of incandescent mantles, together with the various alterations in the method of its manufacture and enrichment, render an investigation into the relationship existing between illuminating power, calorific power, and composition very desirable. This is so, they say, not merely from the purely scientific standpoint, but also in order to enable the Council to decide what attitude to take in the matter of any legislation which may, in the future, be proposed. They suggest, therefore, that one of the relieving Gas Examiners should be employed temporarily for this purpose for a period of two months.

NOTES FROM WESTMINSTER.

THERE was more water than gas courting attention in the Committee rooms last week. The House of Lords Committees who were sitting had not before them a single Gas Bill; and Mr. Whitbread's Committee only took the Bromley and Crays Gas Bill—leaving over the Draycott Bill for consideration this week. It was thought the curtailment of the week by the Committee and the postponement of the Draycott Bill signified negotiations of a favourable character for settlement. But this was not so; the deferring of the Bill being entirely due to meeting the convenience of the Committee. When the Draycott Bill is disposed of, all the opposed Gas Bills in the first House will have been cleared off. Whether opposition will be carried in any case to the second House cannot, of course, yet be said; but so far as the Bills have gone, it is most improbable. The spirit of compromise is abroad, and parties are more and more inclined to settlement than to conducting an expensive warfare in the Committee rooms. It was mentioned last week that North's Navigation Company had withdrawn, on terms, their opposition to the Garw and Ogmore Gas Company's Bill, in which a proposal appeared to purchase by agreement or arbitration the public portion of the supply from the Navigation Company's private gas-works. The Penybont Rural District Council were also originally opposing; but the promoters it is understood satisfied them by agreeing to modify the 12-candle provision for illuminating power, and give the Council the option of purchasing the portion of the plant in the district. The other matters of importance that have occupied notice during the week are dealt with in succeeding paragraphs, excepting the proceedings in connection with the Slough water-works purchase and a success by the Barnet Gas and Water Company in eliminating a clause from the Finchley District Council's Bill referring to interference with the water-valves of the Company. These matters will be noticed next week.

Bromley and Crays. Monday and Tuesday's sittings of Mr. Whitbread's Committee, and a short time on Wednesday morning, were devoted to the consideration of the Bill of the Bromley Gas Consumers' Company, embodying the scheme for the amalgamation of the Crays Gas Company with the larger concern. There have been one or two changes in detail since the Bill was deposited. The ½-candle relief between standard illuminating power and penalty liability has been given up in the settlement with the Bromley Corporation; and, as a concession to the other authorities concerned, the Company have agreed to the clause governing the excess price outside Bromley being altered so that, in the first five years after amalgamation, the excess shall not be more than 6d. (instead of 8d.) and not less than 4d., for the next five years not more than 4d. (instead of 6d.) nor less than 3d., and then a uniform rate. This proposal was a very fair one as it stood; but the outside authorities in the Crays Gas Company's area of supply desired a flat-rate at once. They wanted all the good things expected to arise from the amalgamation of the smaller Company with the larger, and so to deprive the Bromley consumers for years to come of participation in the advantages. Before the Directors of the Bromley Company or the Bromley Corporation could have consented to any such unfair proposal, it would have been the duty of the former to sacrifice the Bill and the whole idea of amalgamation. As it is, under the terms to which the Directors of the Bromley Company have put their hand, it seems to us that everything in the way of advantage will, for the next five years, go to the consumers in the whole district, and the proprietors of the Company will obtain, during that period, no further advantage under the sliding-scale. With the view of satisfying the opposition, it was suggested in the course of the proceedings that, so long as the price of gas in the Crays district was 3d. in excess of the Bromley price, the proprietors should not get any additional dividend; and a clause to that effect now stands as part of the Bill—the dividends named being the 6 per cent. on the "A" stock, 4½ per cent. on the "B" stock (the existing Bromley rates), and 5½ per cent. on the "C" (or Crays) stock. There can be no complaint about a 6 or 5½ per cent. dividend; but 4½ per cent. is not what a proprietor in a trading Company should be limited to in prosperous and normal times. But as the agreement with the Bromley Corporation decrees that the excess price outside Bromley shall not be less than 4d. during the first five years, the proprietors are now receiving the maximum dividends for that period. In other words, as the two clauses stand, their effect, for five years certain, will be to suspend the sliding-scale. It can well be imagined that, under some Boards of Directors, the dividend inducement to reduction having been taken away for a period (so long as competition is not a compelling factor), the interests of the consumers might suffer. However, the Committee considered that the amalgamation was desirable in the interests of the public, and that the concession made by the promoters effected justice as between all parties. The opponents—the Bromley Rural District Council and the Chiselhurst and Foots Cray Urban District Councils—were not in any way antagonistic to amalgamation (they saw the benefits), but only to the terms. Their witnesses, however, in asking for an immediate flat-rate, made no allowances for the normal difference in the price of gas between the Bromley and Crays districts, nor for the fact that the Bromley Company can produce gas at a cheaper rate to the extent of about 8d. per 1000 cubic feet, nor for the fact that the Bromley works have been maintained in such excellent condition that the charges for repairs, &c., are comparatively low, nor for the fact that the

proprietors have not been paid all dividends to which they are entitled under the sliding-scale—in short, for the Company's good conduct, there was a desire to punish, notwithstanding that the Crays consumers will benefit almost immediately by a reduction in price, and that they will participate in all the advantages that hereafter accrue from economies. The fact that the Committee did not give the opponents what they asked for other than the concession already made by the Company, and permitted the continuance of the testing-station for the Crays district at the Crays works, the opposition gained nothing by their appearance at Westminster. On the question of illuminating power, the reduction in the Crays district from 15 to 14 candles is only reverting to the position occupied before the Crays Company were last in Parliament; and as the gas is to be tested at Crays, and will eventually be supplied from the Bromley works, the gas sent out from the latter place will have to be well above the 14-candle standard to meet the Company's obligations at the Crays testing-station. Mr. Alexander Dickson, the Chairman of the Bromley Company, Mr. Corbet Woodall, Mr. A. F. Phillips, and Mr. W. Woodward (the Company's Engineer and Manager) were called as witnesses for the promoters. Mr. Edmund H. Stevenson and Mr. William Cash were for the opposing local authorities.

Draycott and Long Eaton. The troubles of the Draycott and Long Eaton Gas Companies in territory over which they have common parliamentary rights, but which the Long Eaton Company true to part of their name long neglected, were introduced to Mr. Whitbread's Committee yesterday; but consideration was interrupted in the afternoon by the previously arranged appointment to consider the Bromley clauses. The proceedings are to be resumed this morning. This is the most interesting measure of a particularly dull session for gas. Mr. Honoratus Lloyd, K.C., and Mr. Talbot, K.C., are Counsel for the Draycott Company; Mr. Balfour Browne, K.C., and Mr. Hutchinson are for the Long Eaton Company. The Draycott Company are also backed by Sir George Livesey, Mr. Corbet Woodall, Mr. Charles Hunt, and Mr. Thomas Berridge; while Long Eaton have retained Mr. E. H. Stevenson, Mr. William Newbigging, and Mr. Arthur Valon. The Draycott Company, in their Bill, are asking for enlarged powers; but the cardinal question round which the strenuous fight is being waged is the request of the promoters that the powers of the Long Eaton Company shall be determined in the disputed area, which has not been cultivated by Long Eaton until recent years, and now only by the questionable expedient of competing with Draycott at a lower price than gas is being supplied at in the central part of the Long Eaton district. The Draycott Company yesterday told the Committee they did not mind fair competition, but they did think it unfair on the part of a larger Company to try to squeeze them out in this manner, after long occupation under statutory powers. The evidence yesterday showed an excellent commercial enterprise on the part of the Draycott Company; and one considerable trade consumer in the area over which the dual powers exist gave independent testimony which shows what can be done by even a small Gas Company under smart direction in holding their own, and giving, under the vacillating demands of an industrial custom, the utmost satisfaction.

London Electricity. The proposal of the House of Lords that the London Electricity Supply Bills should be referred to a Joint Committee of both Houses has not met with acceptance at the hands of the House of Commons. When the message on the subject from the Lords came before the House, Mr. Lloyd-George was wholly opposed to the suggestion. He prefers that the Bills should proceed in the ordinary way, so as to give the fullest opportunity for consideration and the formation of views on the subject. Joint Committees of both Houses have not hitherto been successful in bringing about a settlement of this vexed question of London's electricity supply, which question has become wearisome by its undue protraction. There are many interests concerned in this matter; and the President of the Board of Trade leans to the opinion that the most direct method of coming to some determination on the questions at issue is to bring all the parties concerned together, and see what can be done by conference before the Bills are submitted to a Committee. The idea is a practical one; and there are those connected with Company electricity supply in London who hope that Mr. Lloyd-George will succeed in his plan for dealing with the question, and that it will be removed from the antagonistic influences of party politics and treated in a common-sense manner. The President of the Board of Trade has shown in office great originality; and he has been magnificently successful in composing industrial disputes. There is no reason why he should not bring about a settlement of the London electricity supply controversy. In connection with Private Bill legislation, however, he appears to be introducing something new here, but something that clearly is not impracticable.

Unfair Electrical Competition. As the Police and Sanitary Committee are now constituted, there is little hope of Companies obtaining justice when the privileges or concerns of local authorities are in question. This was seen last year when a power contrary to all precedent was granted by the Committee to a local authority, but, on reaching the House of Lords, was ignominiously rejected on the case alone of the promoting authority. The Finchley District Council's Bill has been before the Police and Sanitary Committee, with the Barnet Gas and Water Company and the Southgate and District Gas Company in opposition on the proposal of the Council to go outside their administrative area—true not to any considerable extent, but sufficient to form in their case a precedent—and supply electricity, the districts in question being within the supply areas of the Gas Companies. What the Companies asked for (through Sir R. Littler, K.C., for the Southgate Company and Mr. Paddon for the Barnet Company) was that the power of supply outside the Council's territory should not be allowed, or, if allowed, that the Northumberland clause should be imposed. But the Committee would neither deny the power nor grant the ratepayers (who will have to bear any losses occurring by outside speculation, and of whom the two Gas Companies are important ones) any protection by the application of the clause which simply enforces sound financial conduct. It becomes more and more obvious that a House of Lords Committee and not the Police and Sanitary Committee under present circumstances is the court of appeal for Companies against municipal schemes embodied in Bills that threaten them mischief apart from ordinary and fairly conditioned competition. But the time spent before the Police and Sanitary Committee was not altogether wasted. The management of the electric lighting undertaking of the Finchley Council received some exposure that is not to their credit; but the Committee, blind to iniquities that are of municipal origin, saw nothing in the past management of the Council to warrant the insertion of the Northumberland clause. Disinterested readers of the case put before the Committee will think otherwise. But what is there in the Northumberland clause to cause fear where an electricity business is conducted on sound commercial and financial lines? There is nothing whatever that is at all harmful in it. But fear of the clause is great at Finchley, for Mr. Ram, K.C., was instructed to say that, if the clause was put on the promoters, they would give up the Bill altogether. It may be expected that the Companies will renew their request and claim in the Upper House.

Lincoln Water Scheme. The relief sought by the Lincoln Corporation from their water difficulties by the Bill they are promoting in Parliament this session was the subject of a large and rambling discussion before Mr. Mooney's Committee over some half-a-dozen sittings. It would have been more discursive still if the Nottinghamshire County Council had not taken under their wings the smaller authorities in opposition, and presented a joint case from their point of view against the measure. Nevertheless, Counsel for the other authorities, and there were many of them—Nottingham, Mansfield, Retford, Mansfield Woodhouse, Worksop, and Sutton-in-Ashfield Councils, the Worksop Water Company, and others—had to have a little look-in to present points peculiar to the interests of their clients, apart from the general principles underlying the wholesale hostility to the scheme. The project contemplates taking a supply of water from the bunter beds at Elkesley near Retford, and only 4 miles north of the Nottingham Corporation well at Boughton. The Committee were duly impressed with the necessity under which Lincoln rests for a fresh supply of water; and the most was made in deepening the impression of the failures the Corporation have had in trying to secure a new supply, and over which they have spent something like £25,000. This new scheme is expected to cost about £193,000. The county of Nottingham has been abundantly blessed with an excellent supply of good water; and it was all the authorities who were interested in the supply who opposed a city of another county participating in it—the expressed fear being that the Lincoln scheme would do them an injury. We are not among those who consider that geographical and administrative boundaries should stand in the way of a populous city or town obtaining such a necessary as water, nor has Parliament in many of the largest and most important water schemes existing at the present time recognized any such limitation. But at the same time, going far afield for water should not be permitted till there is complete satisfaction that a sufficient supply of the requisite quality cannot be obtained nearer home. The opponents suggested that a good supply can be obtained nearer Lincoln from the limestone; but the answer of Lincoln was that they were tired of costly experimenting in the limestone, and of failing to secure good potable water. There was a little side talk in the Committee room about an alternative scheme that, it was understood, Mr. Percy Griffith had proposed, and which, it was said, was estimated not to cost more than about half the proposed outlay on the scheme incorporated in the Bill. But this alternative scheme was left completely in the background; and the opponents did not make so much out of it as it was imagined they would have done with the knowledge of its existence in their possession. There was no mention of whether the Lincoln Corporation had spent the requisite moderate sum in putting down a trial borehole to test this alternative project, nor even whether it had been submitted to the experts who appeared in support of the scheme proposed by the Bill. A scheme at one-half the cost is a consideration for the ratepayers; and without any evidence as to the investigation of the alternative, it does not seem that the Corporation have exhausted all possibility of getting a good supply of water nearer home. There was a big muster of experts brought in to support the scheme embraced in the Bill, and also to oppose it, including on the promoting side Mr. W. Whitaker, Professor Boyd Dawkins, the Corporation Water Engineer (Mr N. M'Kechnie Barron), Mr. G. H. Hill, Mr. Rofe, and Mr. Baldwin Latham, and on the side of the opponents Professor Kendal, Mr. E. M. Eaton, Mr. C. E. Rose, and Mr. F. W. Hodson. The preamble of the Bill was declared proved; but the driving of adits is to be restricted to a defined area, and other clauses are to be modified to meet the views of Government departments.

Pontypridd Water. The Bill promoted by the Pontypridd Water Company contemplates a scheme that will put them into an enviable position in regard to water supply; and many are the authorities in the district who are to-day wishful that the success of the Company had been theirs—a success won in face of an almost appalling opposing force. The Lords Committee who took this Bill was the one presided over by Lord Clinton; and when the list of the opposing local authorities and private owners and of the names of the thirteen Counsel representing them was read out by the Committee Clerk, it was evident that the attack on the scheme was going to be a heavy and vigorous one. But the Company were well prepared; and seldom on such a Bill, for a town of the size of Pontypridd, has there been seen such an imposing and solid array of experts—both for and against. If Mr. William Jones (the Manager of the Company), Mr. R. T. Rees, Mr. E. P. Hill (Engineer for the scheme), Mr. George Hill, Sir Alexander Binnie, Professor Smith, Sir William Crookes, Dr. H. R. Mill, and Mr. William Cash, F.C.A., were not equal, with Mr. Balfour Browne, K.C., the Hon. J. G. Fitzgerald, K.C., and Mr. Trevor Lewis, to carry through a water Bill, then the Bill would have to be a very bad one. Among the experts called on behalf of the opponents were noticed Mr. James Watson, Mr. William Fox, Mr. Walter Hunter, Mr. G. F. Deacon, and Mr. W. B. Keen, C.A. The Company are seeking the pick of available watersheds under the scheme, as was seen by a large map in the room showing the proposed gathering areas and those of other water-supply authorities; they also desire to construct in connection therewith works of some magnitude, including now and hereafter two reservoirs of a capacity of just over 500 million gallons each; they further desire new capital powers to the amount of £650,000, and to borrow to the extent of one-third; and request permission to increase the rates and charges by an average of 23 per cent. The difficulties of water supply in the district were made much of—but not too much; and the reasonableness of the promoters' proposals was supported by witness after witness. The opponents, on the other hand, sought to show that the Company's past management had not been such as should entitle them to be trusted with the large powers sought. The impurity of the water was a feature in this connection; but the Company met it by offering a clause imposing obligations in respect of purification. Owners and occupiers of property came before the Committee to confess to a feeling of grave alarm at the proposed increase of charges, and contended, through the mouths of their counsel and witnesses, that a satisfactory scheme for Pontypridd could be carried out without increasing the charges. The Committee had their attention directed to the charges in other towns; and they could not regard the proposals of the promoters in comparison as unfair, though they refused to allow more than 50 per cent. of the increased charges to be imposed as from the passing of the Act, deferring the full charges to the completion of the works, with revision after seven years by the Board of Trade. The Pontypridd and Caerphilly District Councils considered that the Company's scheme ought to give place to a joint one sufficiently comprehensive to serve a large number of districts. Some of the very points that the opposition had made as to the character of the water supply in the district assisted in carrying their Lordships to the decision that water was urgently required by the Company, and that therefore the Bill should proceed, with, however, important modifications. The scope of the scheme they regarded as altogether too extensive, especially in respect of the two sites which were so largely coveted by other authorities. The Committee, however, gave the Company the choice of one of the two proposed gathering-grounds—Llia or Fair Fraith. There were other modifications; but this is the most important. The Bill occupied six sittings, ending with that of last Thursday.

Water Obligations. An interesting addition was made to a clause in the Blaydon and Ryton Water Bill when it came before the Unopposed Bills Committee last Thursday. What the Bill in brief proposes is to split up and sell the Council's joint water-works to the Weardale and Consett Water Company and the Newcastle and Gateshead Water Company. The whole matter has been arranged under an agreement; but on the suggestion of Mr. Ernest Moon, K.C., the Speaker's Counsel, this addition has been made to one of the clauses of the Bill: "The obligations of the Blaydon Council and the Ryton Council with respect to the supply of water to consumers within their respective districts or portions so transferred shall cease or determine so long as the Weardale Company or the Newcastle Company respectively are able and willing to supply water, proper and sufficient for all reasonable purposes, which is required by the local authority."

In the notice of the Winnipeg meeting of the British Association next year which appeared in the "JOURNAL" last week (p. 681), it was mentioned that Professor J. J. Thomson, F.R.S., will be President. It appears that the investigations carried on by Professor Thomson in the Cavendish Laboratory at Cambridge, and by the distinguished men of science who first worked under him and received inspiration from his researches, laid the foundation for the new views held by chemists and physicists as to the electronic constitution of matter and the remarkable properties of radio-active substances. In 1894, Professor Thomson was awarded one of the Royal Medals of the Royal Society; and to this was added in 1902 the Hughes Medal, in recognition of his contributions to the advancement of electrical science.

GAS STOCK AND SHARE MARKET.

(For Stock and Share List, see p. 788.)

LAST week, like a good many others of late, was a chequered period on the Stock Exchange. Business was quiet and unenterprising, with frequent fits of dullness. Strong Bank reserves and cheap money do not seem to work the oracle as they used to do; and one wonders why. Perhaps some people are not very wide of the mark when they declare that the Licensing Bill and the Miners' Eight Hours Bill have undermined public confidence, and no one knows where to put his trust. The week opened unfavourably for high-class securities, and Consols fell $\frac{3}{16}$; but some other markets found favouring factors. On Tuesday, the position was reversed; Consols recovering, while most of the rest were dull. Wednesday was the best day of the week. Business was more active, and markets had some backbone in them. Cheered by the position of the Money Market, buyers emerged from hiding and sent prices up. Consols improved $\frac{7}{16}$. On Thursday, the anticipated reduction in the Bank rate was realized; but the cream of the rise had been taken off on Wednesday. With rare exceptions, all the markets were lower. Things fell very quiet again on Friday, with dullness in Consols and Home Rails. The rest were fairly steady; and so they continued through Saturday, though there was very little doing. In the Money Market, there was a pretty good demand for short loans. Rates were well maintained, but discount was easier. The Bank of England 3½ per cent. rate, having lasted a fortnight, was reduced on Thursday to 3 per cent.—a figure not touched for twelve years past. In the Gas Market, business was quite as active as the week before, and more evenly steady in daily volume. The tone was good and firm, with a few noticeable advances thrown in. In Gaslight and Coke issues, the ordinary was strong and active, with an improving tendency. Business was marked at from 95¼ up to 96½ at the close—a rise of 1 in quotation. In the secured issues, the maximum marked 88¼ and 89, the preference 107½, and the debenture 84 and 84¼ (a rise of 1). South Metropolitan was steady and unchanged. Prices ranged from 121¼ to 122¼. The debenture was marked at 84½ and 85. Little was done in Commercials—one bargain each in the 4 per cent. at 106, in the 3½ per cent. at 102, and in the debenture at 82½. Among the Suburban and Provincial group, Brentford old was done at 244, ditto new at from 182 to 184, Bromley "B" at 87¼ and 87¾, British at 43¼ and 44, Tottenham "A" at 124, West Ham at 102½, and ditto preference at 120. In the Continental Companies, Imperial was very quiet at from 178 to 179½—a fall of ½. European fully-paid was done at from 23⅛ to 23½, and ditto part-paid at from 16¾ to 17. Tuscan debentures marked 98½, and Malta from 4¼ to 4 $\frac{7}{16}$. Among the undertakings of the remoter world, Bombay new changed hands at 4⅝, Buenos Ayres at 11⅜ and 11 $\frac{3}{16}$, Melbourne 5 per cent. at 102¼, ditto 4½ per cent. at 101½, Primitiva preference at 5, ditto debenture at 93⅞, River Plate at from 13⅝ to 13⅞, and San Paulo at 13½.

ELECTRICITY SUPPLY MEMORANDA.

Osram Lamps in Public Lighting—The Whole Costs—Prices from Various Quarters—Blackening of Osrams—The American Gas Industry at the Mercy of the Electrician—Financial Failure of the Free-Wiring and Slot System—Water Heating—Editorial Advice from Fraserburgh.

TENTATIVE efforts are being made by many electrical engineers throughout the country to satisfy the local authorities, on a modicum of information, that the Osram lamp is a cheaper means of lighting side streets than the incandescent gas-burner. Where gas undertakings are privately owned concerns, and the electricity undertaking is a municipal venture, it behoves the gas manager to ensure that the representatives of the ratepayers are not misguided by any insufficiency of information accorded them by the electric lighting department. It must be seen that the whole costs are taken into account, and that the disadvantages of putting streets at the mercy of a system of lighting under which a single defect may place the whole in darkness are fairly made known. The failure of one gas-lamp does not affect the others. A short-circuit may put an entire electrically lighted area in darkness; and where Osram lamps have to be suspended in series, through the voltage being higher than the lamps will singly accommodate themselves to, the failure of one may bring disaster on the others in the series. Not only under such circumstances is the portion of the streets affected thrown into darkness, but the cost of renewals is considerably increased. These, however, are among matters that the electrical engineer keeps quietly to himself; it is not recognized by him as part of his duty to enlighten managers of civic affairs as to the disadvantages of what he has to offer them.

But it is on the question of costs that the electrical engineer, if he can push his estimates through without expert criticism, hopes to succeed in getting public lamps converted; and, after a heavy expense on conversion, then—well, the future will tell its own tale. The Electricity Committee of Brighton have recommended the Corporation to use metallic filament lamps in the side streets—the Electrical Engineer having "estimated" that such use will reduce the cost to £2 18s. per lamp per annum—that is to say, from the £3 0s. 6d. now paid for incandescent gas-lamps.

The Corporation, in this matter, have exercised a wise discretion, in referring the matter back to the Committee, in order to ascertain the *exact* financial position involved by the proposal. The "exact" financial position is the main point. The efficiency for the purpose of metallic filament lamps costing only £2 18s. per lamp compared with 2s. 6d. more for the incandescent gas-lamps is a close companion; and so is the question of the number of hours of lighting. In addition, the Corporation must protect the the Electricity Department against themselves, and not let them indulge in further reckless business. As recent years' trading has shown, the effects of recklessness have a nasty habit of finding their way to the ratepayers' purses, or weakening the financial status of the Electricity Department. At least two 32 Hefner unit Osram lamps, giving about 28 or 29 candles per lamp standard, would have to be fitted up to afford the same illuminating power as an ordinary common incandescent gas-burner; and if the public lighting hours in Brighton are about 4000, each pair of lamps would use (at 1·3 watts per candle per hour) 304 units of electricity in a year; and at a charge of 1·56d. per unit—the average price, according to the last return, charged for public street lighting at Brighton—the cost for current alone per lamp column would be £1 19s. 6d. per annum. Assuming the fixing of two lamps per column, with an average 750 hour life per lamp, 10⅔ lamps per annum per column would be necessary; and reckoning these at 6s. per pair, the cost of renewals would be per lamp standard £1 12s. a year. There we have for electricity and renewals £3 11s. 6d., without taking into account the capital cost of conversion, sinking fund, interest, labour, &c. All these expenses have to be taken into consideration, and to be multiplied by the number of lamps converted. Twenty-five or thirty shillings per lamp per annum actual increased cost does not perhaps in itself seem much; but when it comes to be multiplied by a substantial number of lamps, quite another tale is told. How the Electrical Engineer of Brighton works out the annual cost at £2 18s. per annum if he proposes to give the same illuminating power as the incandescent gas-lamps, is a mystery. An explanation of the details for criticism would be very useful.

Mysterious, too, are some figures coming from Hammersmith; but in respect of cost they are not so bad as those from Brighton. The Electricity and Lighting Committee (which in itself is a bad combination for a judicious, economical, and efficient management of the public lighting) have had under discussion the question of substituting Osram lamps in Wood Lane for the present gas-lamps, of which there are thirteen, and the Electricity Committee attribute to these thirteen lamps a total illuminating power of 295 candles. What manner of burners are these that only give 22 candles per lamp? Surely not incandescents. If incandescents they are, the reputed (reputed by the Electricity Committee) total illuminating power is dishonourable, and far from the truth. The annual cost of the thirteen gas-lamps is £39 9s. 9d., which works out to £3 0s. 9d. per lamp per annum. To convert these lamps (the present standards being used) to the Osram system would cost, according to the Electrical Engineer, £78 6s. 8d., which is no less than £6 0s. 6d. per lamp. The total annual cost of lighting by the Osram lamps is put down at £52, which works out to £4 each lamp column per annum—nearly £1 difference without reckoning cost of conversion, labour, &c. The total illuminating power, however, it is calculated will be 1144 candles. This 1144 candles, divided by 13, gives 88 candles per lamp, which suggests that either a 100 or two 50 Hefner unit lamps are to be used. If it is proposed to use the lamps for 4000 hours per year, at 1·3 watts per candle per hour, we arrive at a consumption of 468 units. The average charge per unit for public lighting in Hammersmith, according to published returns, is 1·33d.; therefore the electricity alone would cost £2 12s. per annum. The renewals at a moderate estimate would be £1 12s. There again we have £4 4s. per lamp, without considering capital charges and labour.

At Colchester, the Corporation Electricity Committee have offered to fit two Osram lamps, and supply the service main, joint box, bracket, cramp, lantern, and globe to each existing gas-lamp, for £2 17s. 11d. per lamp, and to fit two Osram lamps to each lamp now electrically lighted, and supply lantern and globe, for £1 3s. 6d. The offer for the supply of current to the lamps is peculiar in its tempting variation and vagueness. The offer is: "For all lamps at present electrically lighted, £1 18s. 2d. each per annum; for all additional lamps connected, £1 9s. 8d. each per annum." The reason for the difference of 8s. 6d. is not explained in the electrical papers. Published returns show that electricity for public lighting was supplied in the town in the last financial year at an average of 2·19d. per unit. It has been seen by the calculation in connection with Brighton that if a pair of the 32 Hefner unit Osram lamps are used for 4000 hours a year, the consumption will be 304 units; and these at 2·19d. per unit would work out alone to £2 15s. 6d., without the cost of renewals estimated at £1 12s. per lamp standard per annum, or together £4 7s. 6d.—again saying nothing of capital costs and labour. A volatile writer in the electrical press describes the gas industry as fighting with its back to the wall, and all through the coming of the metallic filaments. If the figures quoted for street lighting are not indicative of the pressure felt by electrical engineers (which the sprightly electrical writer does not feel), then we do not know what they do indicate, unless it be sheer madness under present conditions. The calculations have been made on prices not vouchsafed to the domestic user, who, of course, on the other hand, employs his lamps for a considerably less number of hours in the year.

With reference to the renewal of Osram lamps, "E. E. S." writing in the "Electrical Review" recently, states that, in his experience, about 30 per cent. of these lamps blacken very badly after not more than 200 hours' run; and the average life does not exceed 800 hours. "I have," he adds, "seen some lamps so black that you could scarcely see through them." The lamps in question are run in series on a 240-volt circuit, direct current; and are carefully paired according to the makers' instructions. The voltage at the lamp terminals does not exceed 243 volts.

While on the subject of the Osram lamp, it may be mentioned that, from communications to hand, it is found that tungstenmania is spreading rapidly among the electricals of America. We see in one advertisement, headed "From Cymerian [*sic*] Darkness to Refulgent Light," that, owing to the advent of the tungsten lamp, "the millions invested in gas properties are now at the mercy of the central station man." The serious confidence with which the Bryan Marsh Company, of Central Falls, R.I., make this announcement is in itself irresistibly humorous; all that the statement conveys broadens out more and more into the ludicrous, as it is considered. "If," says a correspondent, "the Electric Lighting Companies fail to secure shortly the entire lighting business of the United States, it will not be due to lack of confidence on the part of the lamp manufacturers. Painful as it will be to gas engineers to resign the lighting end of their business to the electricians, the process will not be devoid of humour if it is accompanied by a continued exhibition of the lack of a liberal education among the lamp manufacturers, such as is evidenced by the 'cymerian' darkness of the Bryan-Marsh advertisement." Among other literature is a pamphlet issued from the electrical show-room at Chicago. Subject: The tungsten lamp. Style: The very zenith of grandiloquence. In it, we are taken back practically to the Flood; introduced to the lighting methods of the aborigines of the wilderness, of the Eskimo and Patagonian, of the Indians of the Caribbean, of the age of Pericles, of the time of King Alfred. Comes gas, and "under that weird, mysterious light the world gropes about." Thanks! To-day is the day of the tungsten lamp. See how beautifully in this Chicago leaflet we are introduced to it: "To-day, light—just light, is not sufficient. Something that will dispel darkness without discomforts is not enough. Through the long hours of artificial light, we have hungered for the natural sunshine. Efforts to still this yearning produced marked improvements in the quality of electric light. But that was not enough. The search went on. The centralized efforts of the world's laboratories have made possible another stride. A new quality of artificial light has been created through the medium of the tungsten lamp." All's well that ends well. We are glad the electricians of Chicago have been relieved of their pain. But American gas-lighting industry, Adieu! For you we had hoped, until this electrical literature arrived, an even greater eminence than that to which you have attained. But your "weird, mysterious light" is now "at the mercy of the central station engineer." So it has been written ——by the electricians. Yet we fancy you will struggle against a fate to which you have been consigned by hope rather than by any profound belief.

We hear from West Ham a lot about the electricity consumers getting artificial illumination for only sevenpence or ninepence worth of electricity per week. We are not going on this occasion into the relative costs, light for light, of electricity and gas; but it is well to bear in mind that these pence figures do not take into consideration the initial costs of installation, the Osram lamp renewals, and meter-rents. Consumers using only 7d. or 9d. worth of electricity cannot be very profitable ones for the Electricity Department of West Ham, when the cost of connecting up the installation to the mains, generating expenses, interest on plant and cables, and clerical, inspection, and collection costs are taken into account. With this small class of electricity consumption, there is the side of the electricity undertaking to be considered, as well as that of the consumer. This is rather strikingly shown in an article by "B. N." in the "Electrical Review," although he is particularly dealing with prepayment and free-wiring supplies. The working-up of businesses in free-wiring and prepayment supplies has been attempted pretty generally now; and the financial results have, also generally, been disastrous. The writer gives the actual results in one case where the free-wiring and prepayment system was confined to cottages; and these results compare closely with figures from a number of similar towns. The total number of slot consumers was 150, 40 of whom are not now taking a supply, and heaven and earth probably could not move them to renew their custom for electricity. The cost of wiring was £500; and of meters, £500. The bare installation expenditure was, therefore, £1000. The revenue for the year was £130. Ten per cent. (capital charges, &c.) on the £1000 equals £100; so that the balance remaining for current was £30. The inclusive charge to these consumers was 6d. per unit; and the number of units sold was 5200. So that the £30 yielded the magnificent sum of 1·3d. per unit. Out of this 1·3d. there have, "B. N." points out, to be paid all generating expenses, interest on plant at works and on cables, also special costs of collections and attention to meters, which last is "a very serious item." The people do not use sufficient electricity to make the system pay; and if their bills were made bigger, through a larger consumption, they could not afford to pay. "At 6d. per unit, electric lighting is," "B. N." also states, "*very much more* expensive than gas lighting." Another writer has pointed out in the "Electrical Review," something which, on first blush, looks much like a paradox. It is this, that an electricity slot consumer can, up to a certain point, get his electricity

at a cheaper rate than the ordinary consumer. Taking the price of electricity to the ordinary consumer at 4½d., and the meter-rent at 2s. 6d. per quarter; 25 units at 4½d. would amount to 9s. 4½d.; and adding a quarter's meter-rent, the account would be 11s. 10½d. With a slot meter, the charge being 5d. per unit, the cost would be 10s. 5d. Up to 50 units, the same thing would happen. The ordinary consumer of 50 units at 4½d. would have to pay 18s. 9d. and 2s. 6d. meter-rent, or £1 1s. 3d. The slot meter consumer at 5d. would obtain his 50 units for £1 0s. 10d.

In our "Correspondence" columns on Feb. 25, p. 492, there was some discussion, apart from the main subject in dispute, on the cost of water heating by electricity. It is interesting to note that the new "Simplex" kettle costs—it is a new "cheap type"—10s. It is made of tin, its design is said to be "pleasing" to (it may be added) those people who have no appreciation of beauty, and it has a capacity of 1¾ pints. Our electrical contemporaries state that the consumption of electricity by this kettle is 500 watts; and that it will boil its full capacity of water in twelve minutes. Fancy, ½ unit of electricity, 1¾ pints of water, and 12 minutes! A certain prolific letter writer on these subjects should communicate with the manufacturers of this kettle protesting against making known the expensiveness of water heating by electricity, though, of course, on second thoughts it seems the makers should know something about the efficiency of their productions.

Fraserburgh ought not to lose a minute in going in for an electric lighting scheme, combined with a dust-destructor (which combination has been a snare and delusion to so many other towns), if—the "if" should be printed in capital letters—they trust the layman in these matters who sits in the editorial chair of the "Fraserburgh Herald." He has swallowed point by point (as many other laymen have done before him) the estimates of an electrical expert. He does not know that the precedents for electrical estimates not being consummated are of the majority; the precedents of their consummation, of the minority. But, says the Editor of the "Fraserburgh Herald:" "There ought now to be no doubt in the mind of the public as to the course that should be pursued with regard to the lighting of the town." Of course not; for is it not written that the people of Fraserburgh, by adopting electricity, will have a superior illuminant at about one-half the price they pay for gas, and at the end of the year the Town Council will have a profit of over £1000? This looks all so fair on paper; but history and fact do not support these sanguine profits and costs, even with gas at 4s. 5d., and of the high illuminating quality supplied in Fraserburgh. The Town Council are advised that it is their business to procure the light which is the cheapest; and "on this point there need not be any dubiety." The Editor of our Fraserburgh contemporary has lost himself completely to the electric light. Knowing something of the past and present history of electric light undertakings, and of electric lighting costs, we submit in opposition to his opinion that there is much reason for "dubiety." His whole article has a strain about it that suggests anything but disinterested inspiration. The time will without doubt arrive, if the electricity scheme is adopted, when we shall be in a position to remind the Editor of the "Herald" of his present sanguine mood, advice, and predictions. Meantime, the best friends of Fraserburgh will advise the strictest caution in speculating in electric supply. If the Council really desire to do some useful work on this lighting question, they should negotiate with the Gas Company to see whether gas of lower illuminating power cannot be supplied at a cheaper rate, for high illuminating power gas is not required for incandescent burners. With a gas of respectable calorific power and with incandescent burners, householders have the cheapest of artificial lights.

THE FRANCO-BRITISH EXHIBITION.

Gas Engineering Section.

In last week's "JOURNAL," mention was made of the fact that a circular-letter was about to be addressed to the engineers of gas undertakings throughout the country, asking them to lay before their Directors and Committees the claims to financial support of the Gas Section of the Franco-British Exhibition. This letter, which is in the following terms, is signed by Mr. H. E. Jones, the Chairman, and Mr. James W. Helps, the Hon. Secretary, of the Committee who have the matter in hand.

Dear Sir,—As doubtless you are aware, the largest and most important exhibition which has ever been held in this country, and which is to be known as the Franco-British Exhibition, will be opened at Shepherd's Bush, London, in May of the present year. His Majesty the King of England has expressed his warm approval of the project, which has been enthusiastically taken up both in this country and in France. The arrangements have been placed in the hands of an influential Committee, with the Duke of Argyll as Honorary President, and the Earl of Derby as President.

The management of the Engineering Section has been entrusted to a number of Group Committees, with Sir William White as Chairman. All branches are to be represented, including, of course, that of Gas Engineering, to deal with which a large and influential Committee has been formed, of which Mr. H. E. Jones is Chairman.

The Committee feel that this Exhibition (the grounds of which will cover some 140 acres, and which will, it is estimated by the authorities, be visited by nearly 50 millions of people) will afford a most excellent opportunity of demonstrating to the general public the many uses to which gas is applied for lighting, heating, cooking, and for various commercial and industrial purposes. The Gas Engineering Committee have therefore applied for a considerable space, on which they propose to erect, furnish, and properly equip a number of apartments, which will be lighted and heated throughout entirely by gas, and in which the latest and most economical methods of cooking, heating, and laundry work, &c., will be displayed.* In addition to these apartments, special workshops will be erected, in which demonstrations will be given of the numerous efficient and economical ways in which gas is used in connection with the various industries. The Committee have decided that, for many reasons (including the desire to have a free hand in the matter of selection, &c.), it would be well if they arranged for the whole of the expenses of carrying out the scheme being met from a fund they are raising, to which they trust most of the gas undertakings in the kingdom will contribute. They believe, however, that many manufacturers of gas apparatus will find it to their advantage to take space in the neighbourhood of the Committee's exhibit, on which to erect stands for the display of those special appliances which they supply.

The Committee have also arranged to undertake the lighting, with specially selected high-pressure systems, of a large proportion of the grounds, and also to light other parts by lamps supplied with gas under ordinary pressure. By this means they hope to make such a display as will prove one of the most attractive features of the Exhibition.

The Committee are convinced that it would be a grave mistake to allow such an opportunity to pass without taking the fullest advantage of it; and they are confident that gas undertakings throughout the kingdom will share in this opinion, for it must be acknowledged that, though the benefits which will undoubtedly accrue from the proposed exhibition will perhaps be first felt by the gas companies more closely associated with the neighbourhood, yet (especially when it is remembered that visitors will be attracted from all parts of the kingdom) it cannot be long before they will extend to those at a distance, for it will not be denied that anything which improves the position and prospects of the gas industry in general must beneficially affect all gas undertakings, wherever situated. The Committee, therefore, have every confidence in asking you to bring the subject before your Directors or Committee, with a view to obtaining from them a contribution towards the guarantee fund which is being raised to cover the cost of the scheme.

It is estimated that to meet the expenses which will be incurred (including the payment for space, the outlay on advertising, will the cost of erecting, furnishing, and lighting the apartments) and not be less than between £5000 and £6000, towards which about £3000 has already been promised, as shown on the accompanying list, which, it will be seen, includes the names of many companies situated at considerable distances from London.

GUARANTEE FUND.

GAS COMPANY.	£	s.	d.
Gaslight and Coke (London)	1000	0	0
South Metropolitan	250	0	0
Brentford	200	0	0
Croydon	200	0	0
Commercial	200	0	0
Tottenham	200	0	0
British	200	0	0
Bournemouth	105	0	0
Wandsworth	100	0	0
Sheffield	100	0	0
West Ham	100	0	0
Ipswich	52	10	0
Reading	52	10	0
South Suburban	50	0	0
Derby	50	0	0
Brighton	26	5	0
Southampton	26	5	0
Liverpool	25	0	0
Uxbridge	25	0	0
Tunbridge Wells	21	0	0
South Shields	10	10	0
Worthing	5	5	0
Guildford	5	0	0
Leamington Priors	5	0	0
	£3009	5	0

* We understand that the contract for the apartments has been given to Messrs. John Barker and Co., of Kensington.—ED. J.G.L.

Informal Meeting of Scottish Gas Managers.—The Twenty-Fifth Annual Informal Meeting will be held in the Grand Hotel, Charing Cross, Glasgow, on Wednesday, the 1st prox., under the presidency of Mr. G. R. Hislop, F.C.S., of Paisley, who will deliver an address. No papers will be read, but, as usual, questions affecting the gas industry will be discussed. The M'Gilchrist Memorial Committee's report will be submitted to the meeting.

A PARIS GAS-TESTING STATION.

THE current number of the "Journal des Usines à Gaz" contains the plan, accompanied by some particulars, of the gas-testing station which the Municipality of Paris have established in the Rue Jacquemont, on the south side of the Seine. The apartment is 21 feet long, 15 feet wide, and 10 feet high; its capacity being about 3150 cubic feet. The size of the room allows of good ventilation, and the maintenance of a fairly constant temperature while a test is being carried out. The apartment has a central partition, the space on one side of which constitutes the dark-room, where the observer stands. The screen is contained in a tube which passes through the partition; and upon a table below is the gas-meter. The temperature of this room is kept as nearly as possible at 60° Fahr. The room on the other side of the partition contains the photometer-table, upon which are placed the Bengel burner and the scale carrying the carcel standard. Above the gas-lamps is a hood furnished with a conduit pipe to carry off the products of combustion; the distance of the lower edge of the hood from the top of the Bengel burner being 18 inches. In this room stands the examiner's table. The test has to be made of gas which is actually being supplied to the consumers; and to ensure that only fresh gas is being dealt with, the pipe leading from the street main and the branch connecting it with the dark-room have to be cleared. For this purpose, the branch is provided, before it enters the room, with a burner consuming about 60 cubic feet of gas per hour, which is lighted several minutes before the test is made. It is considered that a photometer-room arranged as described will allow of work being carried on with such exactitude as to place the results beyond dispute.

THE "ELLEX" BURNER.

A SERIES of neat and highly efficient upright incandescent gas-burners is being introduced by Messrs. Walter Lowen and Co., of No. 36, Aldersgate Street, E.C., under the title of the intensified "Ellex" burner. It is one of those burners that, when seen, will commend itself. We have had under observation the whole series from Nos. 1 to 5, and can confirm the several excellencies claimed by the firm. The burners are light in appearance, well made and strong, and there is a clean and attractive finish about them. The high duty derived from them is due entirely to careful experimenting that has brought about an exact proportioning of parts; and every burner is individually examined and adjusted before leaving the manufacturers' works. The bunsen tube of the burner is long and of small diameter, with a constriction about midway in its length. The gallery carrying the chimney, as well as the support for the mantle, slip well down on to the bunsen, and the whole can be easily removed for cleaning purposes without taking the mantle off its support. The burner cap also slips off, which is another advantage for cleaning and maintenance purposes. Such an arrangement is far preferable to the screw-on cap, the threads of which in use frequently get so corroded and fixed that it is impossible to remove the cap without doing some damage to the burner. The nipple at the bottom of the burner is also easily detachable. There is, in fact, no part of the burner that cannot receive attention readily and without trouble. Provision is made, too, for a copious air supply, with, of course, means for regulation.

Mention has been made of the small diameter of the burner, and of the series consisting of five different sizes, which makes them suitable for all purposes—the small ones for rooms in which it is preferred to have only one or several small points of illumination, or for halls, stairways, landings, &c., while the larger burners give such a choice that there is no conceivable situation for which one among them will not be well suited. But the special construction of the burner and the several sizes, makes necessary special mantles of small diameter. These mantles are well made; and they fit the burners to a nicety. Tested under a 2-inch pressure, throughout their full length, the mantles were perfectly incandescent from top to bottom, and the light beautifully white. There are three points about the burner that are particularly striking; and they may be tersely put as follows: Small mantle, small consumption, big light. There the effects are summed up. Tested under a pressure of 2¼ inches, the following results were obtained:—

Burner Number . .	1.	2.	3.	4.	5.
Gas consumption per hour, cubic feet	1·43	2·14	3·21	4·28	5·36
Illuminating power, in candles	37	59	84	109	137
Illuminating power per cubic foot of gas . . .	25·8	27·8	26	25·5	25·5

Tested with 16-candle gas, the results were somewhat superior to those quoted. Throughout the series, the efficiency per cubic foot of gas, it will be seen, is high; No. 2 burner rather exceeding the others. The prices quoted for the burners, special mantles, glasses, and mantle supports are very moderate; and considering this and the duty obtainable, the "Ellex" burner should win a good share of favour.

THE BIJOU INVERTED GAS-BURNER LIGHTING WESTMINSTER ABBEY.

AT the time of Lord Kelvin's funeral, in Westminster Abbey, to add to the impressive solemnity of the occasion, the gas-lights in the sacred building were turned low; and some of our electrical contemporaries, with an eye to opportunity, albeit an unfair one, wrote at large on the subject of antiquated flat-flame gas lighting, and the desirability of illuminating the Abbey by electric lamps. The lighting of the building has not been for years now such as could be commended as a model. Flat-flame burners cannot be accounted in these times as anything but wasteful and inefficient; but, on the circumstantial evidence of the long continuance of the flat flames and the still continuing candelabra, it may be presumed that the Abbey authorities were loth to part with systems of lighting so much in keeping with the surrounding antiquity. At the very time the electricians were giving vent to their views as to the lighting of the Abbey, we understood that the authorities were actually considering the improvement of the lighting in the parts customarily devoted to divine worship. Happening in the Abbey a few days since, it was seen that a change has already been made—not by means of electricity, but by bijou inverted gas-lamps. Acting, it is surmised, in conformity with the views of the authorities, the portion of the scheme so far carried out has been with the least possible interference with the existing fittings; and another condition in the improvement has obviously been the provision of just sufficient—and not more than sufficient—light for the comfort of the worshippers. The highly brilliant lighting of places of public entertainment is not the lighting required for a place of public worship. A good and well-distributed light from small centres of illumination, that shall not distress or unduly attract the eye, is in keeping with a sacred edifice and the religious exercises therein.

Looking at the changes that have been made in the North Transept, under the lantern, in the South Transept, in Poets' Corner, and other situations (the spacious but little-used West Nave is, apparently, reserved for future treatment), the change in the lighting has been made at very small expense. The old standards in the positions mentioned have been preserved; and on each standard three specially designed neat harp adaptors have been fitted to arms of the sprays formerly fitted with flat-flame burners—the remaining unused arms being now capped off. These harps carry bijou inverted burners, fitted with opalene globes. The combination is very effective, and having regard to the smallness of the sources of illumination, excellent diffusion of light is obtained just where required. Then in the West Aisle, North Aisle of the Choir, South Aisle of the Choir, and in one or two other situations, pendants have been displaced; and from brackets constructed and supplied with gas in such a way as not to occasion the slightest injury to the fabric, similar harps and burners have been suspended. One of the standards is situated close to the pulpit; and bright lights in this position would have caused some inconvenience to the preacher. To overcome this, and yet not extinguish the lights completely, a stopcock and bye-pass flashes have been fitted up, with the controlling taps at a convenient place at the end of a pew, so that a verger can without trouble just before the sermon extinguish the lights (leaving only the flash jet on), and immediately relight the burners by a turn of the tap at the close of the service.

It is calculated that in all some ninety flat-flame burners have been superseded; and the lighting has been greatly improved by the use of only 36 bijou inverted burners. When the flat-flame burners were employed, the gas supply was not as a rule turned full on; so that it may be estimated that about 3 cubic feet—perhaps rather more—was the consumption per burner per hour, or (say) in all something little short of 300 cubic feet per hour for the ninety burners. The consumption of the 36 bijou inverted burners (giving about 25 candles each) is approximately 36 cubic feet; so that the great improvement in the lighting is being effected on a saving of about 250 cubic feet of gas per hour. On inquiry, it was understood that the lighting was regarded by the Abbey authorities as being good and sufficient, and that in a month only one mantle has required renewing—the remainder all being in excellent condition and giving promise of a long life. For the lighting of the burners, a spirit torch is used.

It is pretty evident that the saving in gas will before long wipe out the cost of the improvement, and that the Abbey authorities have secured the cheapest system of illumination. What, however, we regard as the most interesting feature of the change is the introduction of the bijou inverted gas-burner into the historic Abbey. We feel certain that the experience with the burners will conduce to an early commencement being made with the improvement of the lighting of the West Nave.

Natural Gas in Canada.—According to a recent number of the "Toronto Globe," there are prospects of an abundant supply of natural gas in the Riding Mountains district in Canada. A Government boring-plant has been at work for some time at a spot 18 miles north of Neepawa, and at a depth of 150 feet gas has been struck in such quantity that when it was lighted flames shot up 20 or 30 feet into the air, and the roaring could be heard for a considerable distance.

OBITUARY.

Mr. JOSEPH SMETHURST, J.P., died somewhat suddenly at his residence, "The Acres," Grimsby last Saturday afternoon. He had been indisposed for a few days, but his condition had not been regarded as dangerous. He was Chairman of the Grimsby Gas Company.

Mr. GEORGE DAWSON, Managing-Director of Messrs. Newton, Chambers, and Co., Limited, died at his residence, Lane End House, Chapeltown, last Sunday afternoon. For many years he had been at the head of the iron-works branch, and had carried out important constructive works, of which, perhaps, the greatest was the Buenos Ayres Gas-Works. Other large schemes were executed in London, Manchester, and Birmingham under his direction. He was always proud of the part he took in securing the construction of the Chapeltown Water-Works. He was 76 years of age, and he leaves two sons and four daughters.

The death occurred suddenly last Wednesday morning of Mr. THOMAS HENRY WALMSLEY, one of the most esteemed of the officials of the Gas Department of the Manchester Corporation. Mr. Walmsley, who was only about fifty years of age, had not been in good health of late, but had continued at his employment. He rose as usual on Wednesday, but immediately after breakfasting he sat back in his chair and expired. For more than thirty-five years he had been in the service of the Corporation. In 1872 he joined the staff of the Gas Department as junior draughtsman, and in 1879 he became a draughtsman in the street mains and lamps department. In 1897 he was appointed Assistant Superintendent of the department under the late Mr. W. C. Waddington, and in November last, on the death of his Chief, he was promoted to the vacant position.

By the death, in his 71st year, of Alderman EDWARD LAWLEY PARKER, J.P., which took place at his residence at Edgbaston on the 12th inst., as the result of a long illness, Birmingham has lost one of its honorary freemen, and a citizen whose name will always be associated with the great undertaking by which the capital of the Midlands is furnished with a supply of water from Wales. His career as a business man began in 1863; and having displayed much capacity, and acquired a high reputation for his public services, he was chosen in 1880 to represent the St. Stephen's Ward on the Municipal Council, to fill the vacancy caused by the then Mayor (Mr. Richard Chamberlain) being elected an alderman. He was placed upon the Public Works Committee, and after two years' membership became Chairman, and held this position till 1896, when he was elected Mayor—an office he filled for two years, during which time he was made an alderman. In the first year, he brought all his business tact and unfailing energy to the help of the late Sir Thomas Martineau and the Water Committee in the successful piloting through Parliament of the measure authorizing the Welsh scheme. In the second, the Committee lost Sir Thomas, and the chief burden of the water undertaking fell on the Mayor. At the close of his double term of office, he took the chairmanship of the Committee, and gave a large amount of time and thought to the working out of the details connected with the execution of the scheme. He had the satisfaction of seeing the works in the Elan Valley opened by His Majesty the King on July 21, 1904; and a few months later the whole area of supply was furnished with water from Wales. His municipal services were recognized by his colleagues conferring upon him the honorary freedom of the city—a distinction bestowed by the Council for the first time on one of the members. The formal presentation took place on July 27, 1905, and was accompanied by a public testimonial in the form of a subscription portrait for the Art Gallery, with a replica and a diamond necklace for Mrs. Parker. In addition to his work on the Public Works and Water Committees, Alderman Parker rendered efficient service in many other directions. In the spring of last year he was compelled, through failing health, to give up attendance at the meetings of the Council and the Committee; but he was able quite recently to keep in touch with the work of the Water Department, and to be consulted at his house relative to the direction of its affairs. His colleagues declined to appoint anyone else Chairman, in the hope that he would again be able to meet them. Increasing pain and other complications, however, exhausted his vitality; and the end, though not unexpected, came more rapidly than had been anticipated. The deceased alderman leaves a widow, but no children. The funeral took place on Monday last week. The first portion of the service was conducted in the Cathedral (the coffin being borne up the aisle by officials of the Water Department); and the remains were interred in the Yardley Wood Churchyard.

We learn from "Nature" that the weathering of coal forms the subject of an investigation by Professor S. W. Parr and Mr. N. D. Hamilton, of which particulars are given in Bulletin No. 17 of the University of Illinois. They find that an exudation of combustible gases from coal occurs from the time of the breaking out of the sample from the seam, and that an absorption of oxygen accompanies the exudation. The process of deterioration is probably due to oxidation of hydrogen or of hydrocarbons. It may also be due to a simple loss of combustible gases and their replacement by oxygen. The extent of the deterioration varies with different coals, but deterioration is probably most active the first two or three weeks after taking the sample.

THE GROWTH OF LOCAL EXPENDITURE.

IN the last few years, a good deal of light has been thrown on the subject of municipal expenditure, and there has been much searching after means of putting a check upon it. If little result has been achieved, this is not the fault of those who have investigated the subject, for the difficulties in the way of effective remedy are stupendous. As Mr. Asquith said in the House of Commons, when offering excuses for the failure of the Government to meet the wishes of their supporters for the reduction of expenditure on armaments, "great, formidable, powerful, and insuperable obstacles are presented by an inflated expenditure to those who desire to reduce it." It is one thing to talk of economy, and even to admit its necessity; it is another thing to practise it. Municipal authorities, no doubt, have some ground for pleading that their ever growing outlay is due in some degree to the new services forced on them by the State in response to the demands of an insistent Socialism. But whatever the cause, it must be admitted that it is much easier to point to the evil than to discover remedies for it. For this reason, reports like the one which has just been issued by a Committee of the Birmingham Chamber of Commerce on the local revenue and expenditure of England and Wales are apt to be disappointing. They have an educational value, and serve to point the moral to those who have not made more than a superficial study of the causes of the ever-increasing rates. He who looks to any report of this character for guidance on a royal road to gaining relief from local burdens is, however, likely to meet with disappointment.

The report now issued is the second which the Birmingham Chamber of Commerce have published on the subject. A former one dealt with the Imperial and local revenue and expenditure and debt of the United Kingdom as a whole. The scope of the present report is more restricted; but its subject is not less interesting, nor less worthy of attention than that of the earlier volume. A good deal of the ground has no doubt been covered before, especially by the Royal Commission on Local Taxation; and the statistics are contained in the Local Taxation Returns for the edification of those who have the leisure to extract them and make the necessary calculations. Nevertheless, the report is of great value, for it presents the case for municipal economy in an exceedingly clear and concise form. If it fails to indicate a remedy for the evils, it is because there is no remedy except the education of the electorate, which is necessarily a slow process. Some of the fallacies underlying modern Socialist theories, more especially in regard to the supposed advantages of municipal trading, are submitted to very searching analysis, though the Committee are careful to avoid anything like political discussion, and confine their attention exclusively to the economic results of municipal government. The fact that trading undertakings in the hands of local authorities have not fulfilled the expectation of reducing rates, has been demonstrated in a variety of ways. Mr. Dixon Henry Davies, the Solicitor to the Great Central Railway, put it very conveniently and convincingly in a statement showing the average rates (excluding the poor rate) levied in 78 boroughs in England and Wales, arranged according to the reproductive debt and assessable value of the boroughs referred to. This statement the Committee quote as follows:—

Proportion of Reproductive Debt to Assessable Value.	No. of Towns.	Average Rates in £ (excluding poor rate). s. d.
Under 50 per cent.	11	.. 5 2
Between 50 and 100 per cent. .	16	.. 5 5
Between 100 and 200 per cent..	25	.. 5 8
Over 200 per cent.	26	.. 6 0

With a moderation which does them credit, the Committee remark that "it is evident that the assertion that municipal trading results in the reduction of local rates must be used with considerable caution." What the figures appear to show—and it is confirmed by individual experience—is that the towns in which the Progressive spirit is marked by active participation in business enterprises are not, as a rule, those where the rates are lowest. The fact is that the profit does not always come up to expectation; but on the strength of it, liabilities are undertaken which have to be discharged. "The rapid extension of municipal trading operations during the last twenty years has," it is pointed out, "coincided with an accelerated increase in the amount of local rates and Government contributions; and it is a reasonable inference that, on the strength of receiving certain sums from profit-bearing undertakings, many municipalities have entertained schemes which would otherwise have been left alone." Municipal trading is in these cases doubly a delusion. It not only fails to yield the anticipated rate-reducing profit, but it leads the councils on a wild-goose chase after other schemes which, however desirable, are unquestionably burdensome. How far this influence has extended it is impossible to tell, though there can be no doubt as to the growth of local expenditure and the increase of the rates.

What most impressed the Committee of the Birmingham Chamber of Commerce—as it has all who have given any thought to the subject—is the rapidity with which in recent years local expenditure has gone up, when measured by such comparisons as growth of population and increase of rateable value. For the purposes of comparison, the Committee selected the years 1884-5 and 1903-4. These periods are fairly convenient. The first preceded the reorganization of the municipal system, which began with the Local Government Act, 1888; while the latter was the

most recent year for which information was available at the time that the investigation was undertaken. The statistics for 1904-5, which have since been published, tend to strengthen the comparison; for, owing to the effect of the Education Act of 1902 and other legislation, local expenditure continues to increase at a constantly accelerated rate. However, the comparison of the two selected years presents results sufficiently remarkable.

For example, while in the 19 years ended 1903-4 the population increased by 25 per cent. and the rateable value by 37 per cent., the revenue of the local authorities showed an increase of 144 per cent. The significance of this bald statement of facts becomes more apparent when it is borne in mind that, as is pointed out by the report, the increase in the rateable value of property at a greater rate than the increase of population is not due solely or in the main to an advance in the intrinsic value of property, but to "reassessment under which, for the purpose of fixing the rateable value of hereditaments, smaller deductions have been made from the gross estimated rental." The actual result has been, therefore, an increase in the revenue of local authorities by no less than 96 per cent. per head of the population and 79 per cent. in the pound of rateable value. Further detailed examination of the statistics gives some really remarkable results. Thus it appears that the total amount of the rates levied has more than doubled; the actual increase being 106 per cent., which is equivalent to an increase of 66 per cent. of the population or 52 per cent. per pound of rateable value. In the same period the miscellaneous revenue of the municipalities, including that derived from trading operations, tolls, rents, &c., grew in the aggregate by 131 per cent., or in the proportion of 87 per cent. of the population, or 1 per cent. per pound of rateable value.

The most striking increase is, however, in the amount of Government contributions to local expenditure. The table is worth quoting as it stands:—

	1884-5.		1903-4.		Increase. Per Cent.
Total Government contributions	£3,621,508	..	£15,613,892	..	333
Government contributions per head of population	2s. 8d.	..	9s. 4d.	..	250
Government contributions per pound of rateable value	6d.	..	1s. 7d.	..	216

If the figures for 1904-5 had been brought into the calculation, the comparison would have been even more striking; for by that year the Government contributions had grown to £19,597,046. In view of the not unnatural anxiety of local administrators to pass their burden on to others, the criticism the Committee offer respecting the whole system of Government subventions calls for special mention. To the mind of the average councilman, a contribution from the Imperial Exchequer towards the cost of some service performed by the municipality is apt to appear like a gift from the gods. The local authority has no responsibility for raising the money and feels none with reference to the spending of it. As the report says, the tendency is to look upon State subventions as "so much profit." The result is to encourage extravagance. "Easy come, easy go" is quite as true of the income of local authorities as of that of individuals. "Local administrators do not generally seem to give heed to the fact that these subventions are made out of moneys raised by Imperial taxation, which is levied on the people who have to pay local rates, and that whether the money is raised by rate or tax it is always a tax on the earnings of the people, and is an addition to the public burdens." The subject is not without difficulty.

One of the points to which the attention of the Royal Commission on Local Taxation was directed was that of the grievance felt by ratepayers in being compelled to bear the cost of services which are in reality national. The Commission came to the conclusion that these services—which comprise poor relief, the provision of education, the maintenance of the police, and the upkeep of main roads—must continue to be performed by the local authorities, but were of opinion that a case was made out for placing the burden on the broader back of the taxpayer. This, it was pointed out, might be done either by direct contribution from the Exchequer or the extension and development of the system of assigned revenues which has been in vogue since 1889. The Committee of the Birmingham Chamber of Commerce admit the justice of the demand for the more equal distribution of the burden, but insist that, if the system of grants-in-aid or assigned revenues is to be extended, it must be accompanied by safeguards against the present tendency to abuse. "While," they say, "the administration might remain in the hands of the local authorities, the central Government should have, and exercise, supreme control." This suggests a pretty problem for the consideration of the Chancellor of the Exchequer and the President of the Local Government Board.

When we turn from the subject of the local revenue to that of the expenditure, we again meet with figures which show a startling increase. In the year 1903-4, the expenditure of the 25,900 local authorities in England and Wales reached the enormous total of £129,224,170, which was equal to £3 17s. 4d. per head of the population, and 13s. per pound of rateable value. As compared with 1884-5 the total expenditure had increased by 137 per cent.; while in proportion to population and rateable value, the increase was 91 per cent. and 73 per cent. respectively. More significant even than the actual growth of local expenditure is the increasingly large proportion of it which comes out of loans. Of the total of £129,224,170 spent in the year 1903-4, no less than £30,688,990 was out of loans. While the expenditure out of revenue had increased by 123 per cent. in 19 years, that out of loans showed an advance of 195 per cent. As the report distinguishes between the debt incurred for reproductive and non-productive purposes, we have some interesting information as to the general character of the loan expenditure. Of the sums raised on loans in 1903-4, no less than 45 per cent. were for various reproductive purposes, some of which, like baths and cemeteries, may be said to come within the sanitary duties of the local authorities; while others, including tramways, electric lighting, and gas-works, are of a trading character. It is instructive to observe that while as compared with the year 1884-5 there was an increase of 144 per cent. in the loans incurred for non-productive purposes, the increase under the head of loans for reproductive purposes was up to 244 per cent. The total liabilities of the local authorities in 1903-4 amounted to the very respectable total of £393,882,146, and a year later had grown to £420,515.712, exclusive of the debt of the Metropolitan Water Board. The following table shows how the debt has grown, and its incidence in the two periods under review:—

	1884-5.		1903-4.		Increase. Per Cent.
Outstanding debt (reproductive)					
Total	£81,735,697	..	£187,100,454	..	129
Amount per head of population	£3 0s. 9d.	..	£5 11s.	..	84
Amount per pound of rateable value	11s. 3d.	..	18s. 9d.	..	67
Outstanding debt (non-productive)					
Total	£91,472,271	..	£206,981,692	..	126
Amount per head of population	£3 8s.	..	£6 3s. 10d.	..	82
Amount per pound of rateable value	12s. 7d.	..	£1 0s. 9d.	..	65

How the money is raised by local authorities, and the purposes on which it is spent, are set out in a series of elaborate tables, from which some extracts may be made, because of the interest they must have for readers of the "JOURNAL." As to the municipal gas undertakings, we learn that the revenue which they yielded grew from £3,302,119 in 1884-5 to £7,385,850 in 1903-4; while on the expenditure side of the balance-sheet, the total (exclusive of loan charges) increased from £2,429,148 to £5,257,448. It is interesting to notice that this large increase in the turnover of the gas undertakings was not accompanied by any abnormal growth of capital expenditure; for while in 1884-5 the outlay on gas-works out of loans amounted to £567,690, it was but £679,369 in 1904-5. Electric lighting undertakings, being of more modern origin, do not present figures for comparison earlier than for the year 1894-5, when the revenue was £123,580. This had grown by 1903-4 to £2,265,901, a really phenomenal advance if it could be counted mainly as gain to the municipalities. The statistics, however, do not yield any enlightenment upon this point, for the omission of the loan charges leaves us only the bare information that the aggregate expenditure for electric lighting purposes was in the year 1894-5 £92,540, and in the year 1903-4 £951,053. It is unnecessary to point out that, in this case at all events, the difference between revenue and expenditure is not profit. The capital expenditure on electric light undertakings in the earlier of the two years named was £704,159 and in the second £3,381,986. The demand in recent years for more effective public lighting led to an increase in the municipal expenditure under this head of from £867,083 in 1884-5 to £2,020,245 in 1903-4. With regard to water-works, there is also a striking advance to record. In this case, the revenue increased in the 19 years from £2,086,249 to £4,296,780, and the expenditure (exclusive of loan charges) from £792,624 to £1,721,933; while out of loans the authorities spent in the earlier year £1,231,598, and £3,757,029 in 1903 4.

In a number of carefully-compiled tables, the report shows how the burden of local rates affects different parts of the country, and the influence of such national services as the relief of the poor, the increasing cost of education, and other charges. We have not space to follow the Committee into all these calculations. It is, however, interesting to observe that rating varied considerably in different areas. According to the Local Taxation Returns, the average rates per pound of valuation were as follows in the two last years for which information is available:—

	1903-4.		1904-5.
London	6s. 9·7d.	..	7s. 0·8d.
County boroughs	7 0 1	..	7 1·1
Other boroughs and urban districts	6 2·0	..	6 3·4
Rural districts	3 9·4	..	4 0·3

As the county boroughs are the great centres of industry, the fact that they are the most highly-rated areas in the country cannot be regarded with equanimity by those who are anxious for the industrial progress of the kingdom. In this connection the Committee draw attention to the fact that, not only in regard to local rates, but with reference also to Imperial taxation, and especially the income-tax, an unduly severe burden is imposed on the commercial classes, and a more even distribution of it is urgently needed, so as to encourage, rather than retard, the investment of capital in productive industry. One of the suggestions made by the Committee for remedying the grievances of the ratepayers—that of the payment out of the National Exchequer for services which are in reality of a national character—has already been touched upon. Other directions in which relief is sought are: The equalization of the burden as between different districts; greater uniformity of assessment, for which there is crying need; the removal of gross anomalies in valuation and rating (in this connection the settlement of the question of the rating of machinery); the enactment of legislation abolishing

the system of compounding for rates, so that every ratepayer shall pay his rates direct; the recognition of the right of joint-stock and other companies to vote in respect of the property which they own in the various local areas; the relief of railway companies from some portion of the rating burden which they have to bear, in order that relief may indirectly be afforded to traders in the form of lower railway rates; and, finally, the equalization of the basis of valuation, so that an industry with large premises and a comparatively small turnover may not be called upon to pay more than its due proportion of the rates. The programme of reforms is certainly not small or insignificant.

As we have already said, there is no royal road to municipal economy; but if these suggestions could be carried out, much would no doubt be done to free industry from some of the inequalities and anomalies of which it rightly complains. The real difficulty is to impress local authorities with a due sense of the urgency of the problem. "There are not wanting signs," says the report in a concluding sentence worthy of serious consideration, "that the taxable limit of many areas has been reached, and in some districts exceeded; and the Committee are of opinion that the time has come when all local authorities, before embarking on new schemes, should have regard to the growth of population and of rateable value, which are the only reliable and permanent criteria of the ability of a district to provide the money required for increased expenditure."

AN EARLY ATTEMPT TO MAKE WATER GAS.

Now that the words "water gas" have become "familiar in our mouths as household words," it may not be uninteresting to call attention to an attempt to bring this gas into notice, as recorded in the following article, which appeared in the pages of "The Civil Engineer and Architect's Journal" in October, 1848—a few months before the publication in which it is now being reproduced first saw light.

Some time has elapsed since a patent was obtained for a process of making illuminating gas from water; but the plan was not carried into practical effect, and dropped out of public notice. The invention has once more been brought before the public, and in a manner calculated to attract attention, by being made the subject of lectures delivered by Dr. Ryan at the Polytechnic Institution. The process itself is a very curious one, and though the expense may probably render it a less economical mode of supplying gas than coals, where they are to be purchased at a cheap rate, yet in many parts of the country it is probable that the water gas may be the cheaper of the two; and as its purity and illuminating power exceed those of the carburetted hydrogen obtained from coals, it is well that the mode of making it should be generally known.

To those who are unacquainted with the chemical composition of water, it may seem strange that water should be rendered the source of fire. But to most of our readers it must be well known that water is composed of hydrogen, the most inflammable of bodies, and of oxygen, which, when in the form of gas, is the most active supporter of combustion. A plan of obtaining hydrogen gas from water, by passing steam through a hot tube containing iron, has been long known. The *rationale* of the process is that the steam, in contact with heated iron, becomes decomposed; the oxygen uniting with the iron to form an oxide of that metal, and the hydrogen being liberated in the form of gas. This, indeed, is the best mode of obtaining hydrogen gas in a state of purity; but for the purpose of illumination such gas is of no value. The flame, though emitting great heat, is scarcely visible. The illuminating power of coal gas depends on the carbon it contains; and the more carbon there is in carburetted hydrogen the greater is its illuminating power.

To render the water gas illuminating, it is necessary, therefore, to combine with it a portion of carbon; and it is this part of the process in which the principal novelty of the invention consists. The apparatus employed in the manufacture of the gas, as exhibited at work at the Polytechnic Institution, consists of a furnace, in which are three long iron retorts placed perpendicularly. Two of these are nearly filled with coke and old iron chains, or pieces of iron. Water is admitted into the first of these, and being converted into steam, it is then decomposed by the iron, and the hydrogen gas which is liberated absorbs at the same time some portion of carbon from the heated coke. The gas and residual steam are then passed into the second retort, where a similar process of decomposition and of further carbonization takes place; and it then issues into the third retort, where it is brought into contact with heated tar, and absorbes from it a large portion of carbon. The carburetted gas is then forced through some vertical tubes, to permit the deposition of superfluous tar, and is conducted into the gasholder ready for use.

The illuminating power of this gas is estimated to exceed that of ordinary coal gas by 25 per cent.; and its freedom from sulphur and other impurities renders it far preferable to coal gas. Respecting the economy of the process, Dr. Ryan says nothing; and we believe that it was on this point that the invention failed to be practically useful when first introduced. The cost of the fuel to heat the retorts, of the iron to decompose the steam, and of the tar to carbonize the gas, would, we fear, amount to more than the cost of coal, in most parts of England, for making the ordinary kind of coal gas. In many circumstances, however, we conceive this mode of generating illuminating gas may be advantageous, especially when the purity of the gas consumed is an object of importance.

FUEL AND ITS FUTURE.

At the Royal Society of Arts, on Monday last week, Professor VIVIAN B. LEWES delivered the second of his course of four Cantor Lectures on the above-named subject.

Having in his first lecture (see *ante*, p. 704) given an indication of the wonderful actions by which Nature has stored the energy of the sun of long-past ages in such a form that by combustion it can be converted into heat, Professor Lewes directed the attention of his audience to such figures as can be obtained in regard to the distribution of coal and the rate at which it is being consumed. He pointed out that not only has America the largest store of coal in the world, but that she has the further advantage that the quantity mined is comparatively small; and it is only of late years that the output has been in proportion to the magnitude of the coalfields. In the last year of the past century, however, America deprived England of her position as the world's greatest producer, and is now easily first, raising at least one-third more coal than is done in the United Kingdom.

Leaving America to look after her own vast interests, the lecturer showed by the following table how the ratio between capital and expenditure compares for the chief European Powers, taking them in the order of coal production:—

	Total Coal. Millions of Tons.	Production per Annum, in Tons.
Great Britain	140,000	236,130,000
Germany	150,000	119,350,000
France	17,000	34,780,000
Belgium	16,000	21,500,000
Russia	20,000	17,120,000

He remarked that such figures as these can only be the merest approximation; but if they are of any value at all, they mean that we are the spendthrifts of Europe, and that our supremacy is maintained at the cost of such capital expenditure that, unless we take the position seriously, and do everything in our power to retrench, by economizing much of the fuel now wasted, it is evident that before many generations have passed we must lose our priority among European nations. At the present rate of use, our coalfields will be exhausted in a little more than 600 years; but it is quite within the range of possibility that, if the increased consumption continues, a period may come within a very few generations when the cost of coal will have so risen as to enable foreign markets to obtain coal at a cheaper rate than our own supply; and even at the present time an increase of a few shillings in the price would have a tendency in this direction. Germany's store of unwon coal is now practically the same as ours; but the amount they raise is only half, though their annual rate of increase has been much greater than our own. Still, at the present rate of supply, if it remains constant, the German coal will last for double the time of ours—that is to say, if the life of our coal supply is 600 years, theirs will be 1200 years; and the conditions existing in Germany are all of a character to slowly, but surely, sap our strength and resources.

Turning to the subject of the export of coal, Professor Lewes stated that there are now collieries in England, one alone of which brings to the surface more than a million tons per annum of some of the best coal in the country, not one ton of which finds its way into the English market, but is all exported; it being able to compete with German coal in price right up the Rhine, close to the principal German coalfields, and as far as Mayence. The quantity exported from this country is more than 20 per cent. of the total coal raised; and something should certainly be done so as to prevent the depletion of the coal supplies of the kingdom to supply trade rivals. He acknowledged that it would be madness to advocate anything which would check or cripple our commerce in any way at the present time. But he thought it must be clear to everyone that, in the interests not only of the country but of each individual in it, everything should be done which could tend to economy in the use of coal; and if the individual units in our empire would only realize that by slightly altering their methods of fuel consumption they could not only obtain the same manufacturing results, but do so at greatly reduced cost and at the same time purify the atmosphere, a time would soon come when the health and the wealth alike of the country would be benefited. England suffers to a great extent from her stolid adherence to old ideas and methods which have served her well in the past, and which she hesitates to throw aside; whereas in America and Germany, directly an improvement proves its worth, no hesitation is shown in scrapping obsolete machinery, or relegating wasteful processes to oblivion. Although, in certain branches of trade, we are beginning to adopt progressive methods, much remains to be done; and in no direction is there greater scope for improvement than in the production of power and the generation of heat.

Professor Lewes went on to show that it is not enough to know the calorific value of a fuel. One must know the work it has to do, and be able to fit the fuel to that work, before true economy and success can be attained. It is for this reason that some fuels, so poor in calories as to have been hardly considered until lately,

have achieved the greatest success; while others, of many times the heating value, have been much more effective in fouling the atmosphere than in doing the work needed. He exhibited a table showing the fuels at our disposal for the commercial generation of heat, with their average values in calories and British thermal units. The following are the various kinds of gaseous fuel:—

	Calories.		B.Th.U.
Natural gas	12,008	..	21,615
Coal gas (London 16-candle)	10,666	..	19,220
Water gas	4,430	..	7,980
Mond gas	1,402	..	2,525
Dowson gas	1,310	..	2,353
Suction-plant gas	1,200	..	2,160
Air-coke gas	540	..	972
Blast-furnace gas	528	..	951

It was pointed out, however, that the calorific value of a fuel is chiefly of use in giving a comparison between the fuels themselves, and in its utilization it is necessary to take into consideration the work which the fuel has to do, and how far it is fitted to that work. During the first half of the last century, it was solid fuel only that was employed for the generation of heat and power. The last half, however, saw the advent of liquid and gaseous fuels, which, under certain conditions, proved themselves of the greatest value; and certain processes now largely depend on their use. This is due to the ease of application, which means economy in labour and greater facility for converting the heat into work.

After a few remarks on the use of liquid fuel, and the economy resulting therefrom, Professor Lewes returned to the subject of coal, and pointed out that by far the largest portion of the total quantity employed is used in factories and works for the production of power. He said it has now been realized that the gasification of the coal before use leads to such enormous economies that this procedure is almost universal in Germany, and has been adopted in many of the more up-to-date works in the United Kingdom; indeed, the subject of power-gas production is one of the most interesting of the day. The idea of making a poor fuel gas by passing air through a column of incandescent carbon in an enclosed generator probably dates back to Bischoff's experiments in 1839. But it was elaborated in 1857 by Siemens; and in combination with his system of regeneration it achieved a wonderful success, and revolutionized many manufacturing processes. In the earlier form of generator, the air was sucked by a chimney draught through the bed of fuel, and gave a producer gas having a composition which varied according to whether coke or slack was used. The difficulties caused by sucking the air blast through soon gave rise to the idea of forcing in air by means of a blower; but when this was done, it was found that the temperature of the fuel in the generator became so intense that troubles with clinkering and fusing of the furnace-bars soon resulted, which, however, could be got over by injecting steam with the air into the fuel bed. It was then found that the presence of the steam not only kept down the temperature in the generator to a point which could be regulated to a nicety, but also brought up the calorific value of the resulting gas from 72 B.Th.U. per cubic foot to just double—this being due to the decomposition of the steam by the incandescent carbon giving a large proportion of hydrogen to the gas. This so-called semi-water or Dowson gas was found not only excellent for the heating of furnaces, but also well adapted for use in the internal combustion motor, and, moreover, was capable of providing all the heat and power required in a works. A modification of this method was employed by Dr. Ludwig Mond, and has proved successful for the production of power in large works. One of the latest developments in large-scale power plants is a modification of this apparatus which has been introduced by Messrs. Crossley Bros., and which, by doing away with some of its more cumbrous parts, gives great efficiency and simplicity to it.

Leaving for his concluding lecture the subject of the use of poor fuel gas for power production in gas-engines, and the economy it is capable of effecting, Professor Lewes said it should be borne in mind that the gas made from coal by destructive distillation is, after all, next to natural gas, the most valuable of the gaseous fuels, inasmuch as it contains from three to four times the heating value of the semi-water gas; and the only thing which militates against its use is its cost. If coal gas could only be supplied at 1s. to 1s. 6d. per 1000 cubic feet, it would be one of the most valuable fuels for all purposes. With regard to water gas, which, though discovered at the close of the Eighteenth Century, has been made a commercial success only within the last twenty years, he explained that it is a mixture of nearly equal proportions of hydrogen and carbon monoxide, produced by the passing of steam through incandescent carbon; and he said that when it was made by such improved processes as the Dellwik, it had proved of enormous value for the welding of big tubes, and for other purposes in connection with which the application of solid fuel would offer many difficulties.

In drawing his interesting lecture to a close, Professor Lewes pointed out that the conversion of a solid fuel like coal into gaseous fuel entails a loss of at least 20 per cent. of the heat units. For instance, taking a ton of slack with an average heating value of 15,000 B.Th.U., one could make from it 11,900 lbs. of producer gas, which would contain 25,704,000 B.Th.U. But the coal itself would have contained 33,600,000 B.Th.U.; while if coke had been taken and converted into 2600 lbs. of water gas, this would have contained 20,748,000 B.Th.U., whereas the coke, with its calorific value of 14,226 B.Th.U. per pound, would have been about 20 per cent. more. At the same time, when the coal is burnt by direct firing, there are several factors which reduce to a small fraction of the original heat the amount that can actually be utilized. Moreover, with direct firing each furnace has to be separately fed; and although mechanical stokers and other labour-saving devices will reduce both smoke and labour, nothing can compete in a large works with the convenience and economy of gasifying in a generator of modified Mond type the whole of the fuel used, recovering the nitrogen of the slack in the form of sulphate of ammonia, and piping the gas through the area of the works for combustion in the various furnaces—the gas serving not only for heating but for power purposes, when the economy realized is even greater than for furnace firing.

In his lecture last night, Professor Lewes dealt with the smoke problem, smokeless fuels, and the question of high *versus* low temperature carbonization in the manufacture of illuminating gas; closing with some remarks on the gas industry and its work in the future.

RECOVERING CYANOGEN COMPOUNDS IN THE DISTILLATION OF COAL, AND DISPOSING OF EFFLUENTS FROM AMMONIA STILLS.

At the Meeting of the Yorkshire Section of the Society of Chemical Industry, held at Sheffield last Wednesday, a paper on this subject, which is of particular interest to those engaged in the manufacture of coke and gas, was read by Dr. J. Grossmann, of Manchester. The author referred briefly to the method which he proposed two years ago for the working up of crude gas liquors, and which, while it accomplished the recovery of cyanogen compounds, aimed chiefly at the avoidance of the effluent which at present is produced from ammonia stills. As, however, the disposal of the effluents from ammonia stills does not in every works present insuperable difficulties, it need not necessarily go hand in hand with the previous elimination of the cyanogen compounds. For this reason, Dr. Grossmann has designed two separate processes—one dealing with the recovery of cyanogen compounds from ammonia liquors, and another dealing with the disposal of the effluent from the stills, and which may be worked separately or conjointly.

Dr. Grossmann briefly discussed the processes of Bueb, Foulis, and others, which aim at the extraction of cyanogen compounds from the crude distillation products of coal in their gaseous state, and the complications introduced by the fact that double compounds of ferrocyanide were obtained which contained ammonia. He paid a high tribute to the work accomplished by Mr. R. Forbes Carpenter, the Chief Inspector under the Alkali Act, and his Assistant, Mr. Linder, whose investigations had clearly shown that the cyanogen compounds evolved during the dry distillation of coal were in the state of prussic acid or ammonium cyanide, and were absorbed as such during the condensation of the gases. Fresh crude ammonia liquors, therefore, contain practically no other cyanogen compound except ammonium cyanide. Sulphocyanide and ferrocyanide are secondary products due to the action of air. By treating the fresh liquors as soon as practicable after condensation with suitable iron compounds, it is possible, under the special conditions which Dr. Grossmann has worked out, to convert practically all the cyanide present into soluble ammonium ferrocyanide, without producing any of the objectionable insoluble double compound with ammonia. The crude ammonia liquor which has been subjected to this treatment passes through the stills in the usual manner; lime being used for the evolution of fixed ammonia, as at present. The effluents contain ferrocyanide of calcium, which is precipitated by means of a suitable iron salt; and the iron ferrocyanide thus obtained may be worked into marketable sodium ferrocyanide at the works at which it is produced, or sold to chemical manufacturers on the basis of the ferrocyanide which it contains.

Dr. Grossmann's second process deals with the disposal of the effluents, whether produced as at present or after extraction of cyanogen compounds. He found by experiment that, under proper conditions, these liquors have only slight corrosive action on iron. Attempts have been made to use them in steam-boilers for steam raising; but the results have been unsatisfactory. The boilers deteriorated rapidly; and this was attributed to the action of the sulphocyanide present in the liquors. Dr. Grossmann has, however, found that, up to a pressure of 50 lbs. to the square inch, effluents containing even abnormal quantities of sulphocyanide show no corrosive action on wrought iron or steel. On the other hand, the effluents contain sulphate of lime in such quantity as would in itself act injuriously on any boiler. Dr. Grossmann, therefore, proposes to remove the sulphate of lime from the effluents by barium carbonate, which precipitates it quantitatively. The liquors can then be used in boilers for steam raising; and the daily blow-offs, which would only amount to one-twentieth of the original bulk of the liquors, could be used for the recovery of other products, and evaporated to dryness in a small furnace.

The first process dealing with the recovery of the cyanogen compounds is not only valuable on account of the extra revenue which it will yield, but also for hygienic reasons, inasmuch as it prevents the evolution of highly poisonous prussic acid and its compounds in the distillation of the crude liquors. These very seriously affect the health of the workmen, and may even lead to,

and probably have led to, fatal consequences, which have been attributed to the action of sulphuretted hydrogen and other gases. The process of rendering the effluents fit for use in steam-boilers entails some expense; but, in conjunction with the first process, the profit derived from that process will fully cover the expense of the second process, and still leave a considerable margin of extra revenue.

NATIONAL PHYSICAL LABORATORY.

Annual Report of the Executive Committee.

We have received the report on the work of the National Physical Laboratory for the past year, which the Executive Committee submitted to the General Board at their meeting last Friday. It is accompanied by the report of the Director (Dr. R. T. Glazebrook, F.R.S.), a statement of the work proposed for the current year, and reports on the works of the Engineering, Metallurgy, and Observatory Departments by their respective Superintendents.

The Committee open their report with a reference to the death of Lord Kelvin, which deprived the Laboratory of one of its most valued friends; and they place on record their sense of the inestimable value of his work to science, and the loss which has been caused by his removal. By the death of Sir Benjamin Baker, also, the General Board lost a member whose services were of great assistance. He was specially interested in Dr. Stanton's wind-pressure experiments, the initiation of which was due to him. The Photometric Division was further equipped during the year; and Mr. C. C. Paterson (one of the Assistants in the Physics Department) represented the Committee at the meeting of the International Photometric Commission at Zurich in July, when, as the result of experiments carried out at the Laboratory, in Paris, and in Berlin, the ratios of the intensities of the pentane, Hefner, and carcel lamps were determined. In the Engineering Department, Dr. Stanton's research on wind pressures, already referred to, advanced a further stage last year; and in a paper communicated to the Institution of Civil Engineers (and noticed in the "JOURNAL" at the time), he gave the results of a number of experiments on plates in the open air. Another research of importance, which has recently been submitted to the Institution of Mechanical Engineers, deals with the resistance of steel to impact. One important result observed is a marked change in the relative resistance of materials according as they are subject to a few heavy blows or to a large number of light ones. In the Photometric Division, a considerable number of lamps were tested for life, in accordance with the specification of the Engineering Standards Committee. The Committee say the need for developing this work in a complete manner is becoming more and more clear. Only a very fully-equipped station, capable of dealing with the matter on a large scale, can meet the need; and the Committee propose to arrange for this without delay. In the Thermometry Division, the most important development has been the growth of the pyrometer tests. The completion of the new laboratory for metallurgical chemistry, described in the Committee's report for 1906, allowed them to begin last July the testing work for the Indian Government formerly carried on at Coopers Hill. The Committee allude to the fact that during the year a Committee appointed by the Treasury inquired into the work performed at the Laboratory, with special reference to the character of the tests undertaken. [The report of the Committee referred to has been issued as a Parliamentary Paper.] The report concludes with a brief review of the financial position of the Laboratory. The income for the year was £17,058, or £2739 more than for 1906; while the expenses were £16,757, including £500 placed to the general equipment fund —leaving a balance of £301 on the year's working. The general balance-sheet shows a sum of £1282 at the end of the past year, compared with £710 at the close of 1906.

In the statement of work proposed to be done in the current year, reference is made to the resolution passed at the meeting of the International Photometric Commission in Zurich, urging the national laboratories to make a further attempt to reproduce the Violle standard. The resolution raises once more a very important question. It appears that the progress which can be made in this research during the present year depends chiefly upon the degree of success attending the experiments of Dr. Harker, the Senior Assistant in the Physics Department, on refractory furnaces of larger diameter than those hitherto made. Much work still remains to be done in investigating the small differences in candle power (of the order of one-half of 1 per cent.) which have been observed in different pentane lamps. The Committee remark that "the measurement of the candle power of flame standards to a small fraction of 1 per cent. is necessarily a tedious process, as the mean of a large number of observations must be taken if an accurate result is desired." The time required to set up the lamps and allow them to become uniformly heated necessitates a bench which can be devoted entirely to this particular kind of work. The construction of a new bench in the Laboratory workshops is under consideration.

In the report of the Director, it is stated that, in addition to the work entailed in connection with equipment, further progress was made last year in the establishment of the unit of candle power on a more definite basis. The Engineering Standards Committee, in their specification for glow lamps, adopt the pentane lamp at the National Physical Laboratory as the primary standard for all testings under the specification. Various experiments were made to account for the small differences detected in the candle power of pentane lamps. One disturbing factor which was found to account for a portion of the difference was the varying degree of "shine" of the internal black surface of the shades. In the lamps tested, this was found to cause a maximum difference of about 0·4 per cent. In connection with these investigations, Mr. A. G. Vernon Harcourt, F.R.S., visited the Laboratory, and interested himself in their progress. Dr. Glazebrook alludes to Mr. Paterson's attendance at the meeting of the International Photometric Commission at Zurich, and emphasizes the importance of the result of the conference—viz., the definition of the ratios of the three principal units of light. He adds that intercomparisons of light standards were made in March last with the Laboratoire Central, through the medium of electric lamps brought over by MM. Laporte and Jouaust. Among other very interesting tests made last year was one on a series of gas-burners, and another on the calibration of street illumination photometers. In connection with high-temperature work, a large apparatus was set up for testing the Féry type of radiation pyrometer with mirror; provision being made for the simultaneous test of ten instruments and a standard on a "black body" furnace, the temperature of which is measured by a thermo-couple and a potentiometer. It is remarked that the verification of these instruments, as distinct from other types of radiation pyrometer, is a matter of considerable difficulty. Among the miscellaneous tests carried out last year were some of samples of fire-bricks of varying composition, expansion pyrometers of different tyes, and flash-point apparatus for oil tests; and several burners consuming gas or petrol were investigated in regard to the distribution of temperature throughout the flames.

The report contains the names of the members of the staff, and a list of the papers published by them; and in an appendix is given a general description, accompanied by views and plans, of the electro-technical buildings of the Laboratory and their equipment. These were commenced in 1905, and were to a large extent completed during the past year. The following are some particulars regarding the Photometry Section: It has two floors, with a battery-room forming a third. The ground floor is used chiefly for life-test work, and the first floor for the standardization and general measuring of work. The photometric standards room is used for all the smaller work. The measuring apparatus and reflecting instruments are all controlled from a central table, as well as the circuits to the photometer bench, which is of the well-known Reichsanstalt pattern. It is supported on a long carriage which moves on wheels along a rail track. This arrangement has the advantage that a light source to be measured can be supported independently of the bench, and the latter moved towards or away from it as desired. Velvet light-screens are suspended from a pair of light tubes which run the whole width of the room immediately over the bench. Arrangements have been made for the testing of gas lamps and burners; but a separate small gas-making plant is needed in order that gas of the required quality may be produced for test purposes. The equipment of the large photometer-room, which has a 90-feet track, has not yet been seriously taken up.

The Bland Burner.

In consequence of certain facts that recently came to their knowledge, Messrs. Bland and Co. had to seek the assistance of the Courts to establish their right to the exclusive use of their name in connection with their now well known burners. In the end, the action they commenced was disposed of on their receiving a satisfactory undertaking not to make any unauthorized use of the name again, and on payment of an agreed sum for damages and costs.

The Next Annual Meeting of the American Gas Institute.—There has been a post-card ballot of the members of the American Gas Institute on the subject of the place for holding the annual meeting next October, under the presidency of Dr. A. C. Humphreys. Opinions were divided between Detroit and New York; and the latter city has been selected by 522 votes, compared with 125 given for the former.

The "Buisson Helia" and Methane Gas.—The issue of the "Journal de l'Eclairage au Gaz" for the 5th inst. contains two reports by M. Berget on his tests of the above-named light, for exploiting which in this country a Company has lately been formed, as already recorded in the "JOURNAL" (see *ante*, p. 282). Reckoning a carcel as equivalent to 8·9 English candles, he says he found that the luminous intensity of a filament mantle was 64·5 candles, with a consumption of 12·1 litres (rather less than half-a-cubic foot) of gas per hour; while the light emitted was perfect in quality. It is expected that the new mantles will soon be on sale at the price of 2 frs. 75c. (2s. 3d.) each. With regard to the other branch of the Company's business, it is stated that the process they intend to work is a considerable improvement on that originally brought out by MM. Sabatier and Senderens, and that experimental plant is about to be put up at Levallois for testing it.

LONDON AND SOUTHERN JUNIOR ASSOCIATION.

Visit to the South Suburban Gas-Works.

A visit was paid to the works of the South Suburban Gas Company, at Lower Sydenham, on Saturday afternoon by about sixty members of the Association, who were met on their arrival by Mr. S. Y. Shoubridge, the Engineer, and dispatched in small parties on their tour of inspection, under the guidance of Mr. J. W. Whimster, Mr. A. G. Dickinson, Mr. E. J. Luff, Mr. A. V. Hendrickson, Mr. W. Maltster, and Mr. G. Ross. Illustrated articles which have appeared in the "JOURNAL" from time to time (the latest as recently as the issue for Jan. 1, 1907, p. 25) have made readers so well acquainted with the works that there is no need to enter into any detailed description here; but just a few points may be noted of the many that were gathered while going round with Mr. Shoubridge.

One of the first things that would strike any visitor to the South Suburban Gas-Works is, of course, the enormous extent to which the Company are able to rely upon themselves for what they require. In this respect, a feature is brick-making, which was not undertaken from any desire to compete with the trade, but because it was desired to level the ground, and this necessitated the removal of a hill consisting of good clay. Instead, therefore, of paying for this clay to be carted away, it is made into bricks. These bricks are used chiefly on the works—all the more modern buildings have been erected with them—but the Company also sell a good many. Another matter to which considerable attention has been paid is the manufacture of fire-bricks, blocks, &c., of which all that are needed are made on the works. In this process, the old fire-bricks which are usable are employed again. They are ground up in a mill and sieved, and then mixed with an equal amount of new clay from the Glenboig district.* Then when the men in the meter-repairing shop are not fully engaged in repairing meters, they make new ones up to 30-light; and the Company make all their own harness, stokers' gloves, bags for slot-meter collectors, and things of that kind. Many of the roofs, &c., have also been made by the Company's own men; and at the time of the visit there was to be seen a large sulphate saturator which had been made on the spot. The Company possess three locomotives (all the repairs to which are carried out by their own men); and of the building in which they are housed not much more than the glass of the windows was made off the works.

When passing through the machine-shop, the visitors paused and inspected with a considerable amount of interest a steam-pressure reducing valve, which is the invention of Mr. Ross, who, it may be mentioned, occupies the position of chief foreman of the fitters. This was shown in action; and it was seen that the most voilent fluctuations in the inlet-pressure caused practically no variation at all at the outlet. In fact, though the pressure on the inlet was increased 40 or 50 lbs. within about a second, the pressure at the outlet did not vary as much as 1 lb. A distinct advantage of the valve is its simplicity; there being no springs or diaphragms, or anything of the sort, to get out of order. It can evidently be relied upon to reduce a steam pressure from (say) 200 lbs. on the inlet, to 2 lbs. on the outlet, and to keep it at that. The valve seen on Saturday (which is the subject of a patent) is not only a home invention, but it was also made on the works. There is on the works, in more than one direction, further evidence of Mr. Ross's inventive faculty. Particular mention may be made of his arrangement for loading bags of sulphate into waggons, by the aid of which one man can do what it required six to carry out before. The apparatus, which travels overhead right across the sulphate-store and outside to the waggons, and is worked by compressed air, clutches the bag of sulphate, lifts it, runs it out of the house, and lowers it into a railway truck. The air-compressing machinery for the West's charging and discharging apparatus is also controlled by an arrangement of Mr. Ross's invention, by which the action of the engine is automatically regulated in accordance with the pressure of air. While on the subject of home inventions, one must not forget the patented arrangement of Mr. Maltster, who is chief foreman of the works, for removing sulphate from the saturator by means of a pump. One advantage of this is that the sulphate reaches the draining table in a drier condition than would otherwise be the case.

The retort-houses now in use are Nos. 1, 3, and 5. The last-named is fitted with West's compressed air charging and drawing machinery; the coke being drawn out by endless wire ropes (driven by a gas-engine), in trucks running on rails beneath the charging floor. These are then taken up an incline, from which the coke is tipped on the heap. A 30-H.P. Crossley engine is used for the work. This form of conveyor, which is, of course, one of the oldest, possesses an advantage in that the outlay on maintenance is not so great as with other forms. No. 3 house (which was the subject of the article in the "JOURNAL" of Jan. 1 last year) was extended, and the roof raised, for accommodating De Brouwer machinery; and to generate the electricity required and run the hot-coke conveyor three Grice gas-engines are now installed, though only two are kept running. The carbonizing wages in this house are under 1s. a ton, which, of course, is an enormous saving on what was previously paid for hand labour. The coal trucks as they arrive are tipped by a ram, and the contents conveyed to the charger, while the coke is removed by the conveyor and deposited on the heap. No. 1 house is fitted with inclines; and here the members were able to see in action Mr. Shoubridge's own charger, arranged for the purpose of giving uniform velocity to the coal, and thus ensure level charging.* This is really a combination of three separate chargers—for the top middle, and bottom retorts respectively; and its advantage from the maintenance point of view will be readily understood when it is mentioned that it has been in use for the past six or seven years, and has not cost £2 for repairs. No. 2 house has been made into a fire-brick works and stove-repairing shop; while No. 4 house is now out of action, and it is a question whether it shall be made a similar house to No. 3, or whether an installation of vertical retorts shall be put in.

A feature of the works is the water supply, which is obtained from a little river running through the land. At the present time the water is drawn into a reservoir, and passed through a series of wire net gates, after which it is pumped for use as required. It is, however, now intended to build a water-tank by means of which it will be possible to supply the whole of the works by gravitation. In the Livesey washers, petroleum—"Rock Light" lamp oil—is employed for removing the naphthalene from the gas; and this has been found as effective as anything else for the purpose. In connection with the manufacture of sulphate of ammonia, there is a Claus sulphur-recovery plant, from the kiln of which, when it is cleared out once a year, about 50 tons of sulphur are removed. The water-gas plant consists of two 1 million cubic feet per day sets by the Economical Gas Apparatus Construction Company, which are housed in a building arranged to accommodate two more similar sets. Water gas, however, is not made as part of the regular manufacture. There is on the works a booster, which is found to be most useful for mantaining the pressure. Another building visited was the stables, which contain twenty-five splendid horses employed for carting coke, &c. Of these, Mr. Shoubridge is justly proud; but he is nevertheless giving his attention to the question of motor-waggons.

Turning to the stove repairing shop, it may be remarked that last year there were brought in 6865 cookers, owing to changes and other causes; while 7326 were sent out. During the present month 41 cookers a day, on an average, have been sent out; and the distributing of these over 20 square miles of country represents a considerable business. Every cooker that comes into the shop, even if it has only been out a week, goes through the whole process of cleaning and renovating; and the average cost of so dealing with a cooker last year was 8s. 11d. That is to say, every cooker when it came in cost the Company this sum before it was sent out again. It is interesting to note that, in the proper season, an immense business is now done in the hiring-out of gas-fires. The Company have only hired them out for the past two years; and Mr. Shoubridge was much astonished to find what a great demand existed for them when it was found by consumers that they could be obtained on hire, though people will not go to the expense of purchasing them. The demand, too, is now growing in the direction of the more artistic fires.

On the conclusion of the inspection, the party were entertained at tea in the men's recreation room.

The President (Mr. W. Upton) afterwards said they had had a most pleasant afternoon, thanks to Mr. Shoubridge and to the members of his staff, who had done so much for them. He did not think they had ever had the pleasure of being in a works where everything had been more thoroughly explained to them than had been the case that day. Speaking for the Association, he was glad to see so many members had turned out for the visit; and he trusted Mr. Shoubridge would feel fully recompensed for his trouble and the arrangements he had entered into, by the interest that had been displayed. The appearance of things on the works had struck him (the speaker) and others very forcibly. Of course, the comparatively large space over which the works were spread tended to make the labour very pleasant for those engaged in it; and this, in the present days of machinery, was not only worth consideration, but was a most important point. It was becoming an article of faith with him, from observation, that it paid to take care that men worked under the best possible conditions. If this were done, they could with justice demand the best work from the men. Everything on the Sydenham works was splendidly arranged; and he was sure from the aspect of the employees that there was no doubt about their ability or their willingness to serve. The Company, like the South Metropolitan Company, were well known for the excellent relations existing between them and their employees; and it was good to see that such conditions of commercial life should be not only possible, but a great success. There was one little point that perhaps struck the keynote of the whole run of these places—the machinery. They had all noticed the beautiful order in which the machinery was kept there. It paid to look after machinery, not only from the point of view of upkeep or depreciation, but from the moral aspect of the matter. If a man was among surroundings where everything was spick and span, he became spick and span himself. If they wanted order, they must see to it themselves, as far as ever they could, that the first principles of it were applied. In a works where everything was so well ordered as was the case there, they could not imagine anything else but that the human element was in a similar condition; and when a plant and a staff worked together in this way, it stood to reason that the whole thing must be a commercial success. Of course, it all led to

* A description of the plant was given in the "JOURNAL" for Jan. 5, 1904, p. 21.

* See "JOURNAL" for Oct. 22, 1901, p. 1025; and Nov. 5, 1901, p. 1158.

one thing—the value of the human equation. In these days of machinery, and the continuous extension of it, many men were displaced; and one often thought that the time for personal initiative was over. But it was nothing of the sort. If they listened, they would find it said on all hands, "What we really want is men of initiative." Especially was this so in the gas business. There could not be any doubt that in many directions, both on the manufacturing and the commercial side, things were trending towards a big change. It was a point worthy of note that the juniors were willing to devote their leisure to endeavouring to perfect themselves in their knowledge of the business. These visits were of great value to them. They could not expect individually to be shown over the great London works by the chiefs, as they had been; it was only as an Association that this was possible. He begged to propose a hearty vote of thanks, both to the Company who had granted permission for the visit, and to Mr. Shoubridge for giving up his time and his staff who had so ably assisted him.

Mr. Charles Fullbrook, in seconding the motion, remarked that the visit had been of the greatest benefit from an educational point of view, and also extremely pleasant.

The proposition having been carried by acclamation,

Mr. Shoubridge thanked them heartily, on behalf of the staff and himself, and also on behalf of the Company, for the vote. He said he could assure the visitors that it gave his Directors great satisfaction to hear that they wished to inspect the works. Sir George Livesey said he hoped they would enjoy their visit, and expressed regret that, owing to another engagement, he could not himself be present. It had been a pleasure to him (Mr. Shoubridge), and he was sure it had to his assistants, to take them over the works. They did not consider them show works by any means—they were partly very old, and partly very new. He was glad to see so many young men—some of whom were no doubt to be leaders of the industry in years to come—take such interest in visiting works. It was one of the most hopeful signs of the present day that the juniors were coming forward as they were. The Junior Associations all over the country were doing a great deal. A few years ago, there were no organizations of the kind; whereas now they read of frequent meetings being held. He had been astonished at the exceedingly able papers presented to some of these meetings—papers not surpassed by those read before the Senior Associations. This showed that among the juniors to-day were a good many very able men, of whom they would hear a great deal more in the future. One of the best things they could do was to continue this practice of visiting works. Even though a works might be comparatively small, there was always something to learn in it—either something to adopt or something to avoid. They could learn something everywhere; there was no monopoly of genius. But though they were doing good for themselves and for the industry by going about as they did, it would be better still, if it were possible, to extend their visits to foreign gas-works. The German and French works contained very good gas engineering, and they had some brilliant men on the staffs, from whom there was a great deal that might with advantage be learnt. Englishmen were prone to stay at home too much, instead of gaining all the information they could as to the practice of other countries. The Americans were wide-awake as to the importance of doing this; and he had had several of them, and also some Japanese, over his works. He felt sure that some, at any rate, of the members had learnt something during their inspection of the works that afternoon; and if at any time they wished to pay another visit, it would give him and his staff great pleasure to welcome them.

The President of the Bradford Engineering Society (Professor G. F. Charnock), in the course of a discussion on "Gas *v.* Electric Lighting for Mills and Workshops," said he did not wish to cast a reflection on the splendid progress that had been made in the last few years; but the present position, when reckoned up, was a startling one. Under the very best conditions prevailing, out of every 100 tons of coal delivered to a gas-works 97 tons were absolutely wasted so far as the production of light was concerned; but an advantage in favour of gas was that out of the 100 tons of coal used there remained the coke and certain rather valuable bye-products. On the other hand, he supposed that in the case of 100 tons of coal delivered at an electric lighting station, it would be considered a good result if not more than 98 tons were lost. He was speaking entirely from the point of view of lighting, and not taking power into account at all. This result should spur engineers on to achieve something better. He went on to suggest that, as most of the gas now used for illuminating purposes was burned in connection with a mantle, the time had arrived when something might be done to supply cheap gas—something in the nature of water gas. This would no doubt give an enormous impetus to the use of gas for heating purposes. Mr. H. Ellis, of the Corporation Electricity Department, contended that electricity was the cheapest form of illuminant known when the arc lamp was used. For the lighting of mills, where the demand passed a certain limit, the price of current for lighting was the same as for power; and even with the ordinary carbon filament lamp, electricity was as cheap in the long run as incandescent gas lighting. Mr. H. F. Whitehead explained the "Selas" system of high-pressure gas lighting, and said that lamps giving a total of 20,000-candle power could be kept burning at a cost of 1s. 0½d. per hour.

MANCHESTER JUNIOR GAS ASSOCIATION.

A well-attended Meeting of the Association was held in the Manchester School of Technology, Whitworth Street, on Saturday afternoon. Mr. E. J. Wellens, the President, occupied the chair, and briefly introduced Mr. J. E. Dudley (of Higginshaw, Oldham), who read the following paper :—

RETORT HOUSE EXPERIENCES.

The subject of this paper will, I hope, be of interest to you all. Every engineer or manager has had experiences of various kinds. Whatever they may be, I am hoping to introduce something of a different character to anything you have seen.

The productive capacity of the Higginshaw works is 4,750,000 cubic feet per 24 hours. The make ending March 25, 1907, and 1908, is about 750 million cubic feet. There are three retort-houses. Nos. 1 and 2 contain each twenty beds of sixes, or 480 mouthpieces, direct fired, hand stoking. Each house will carbonize 126 tons of coal per day. No. 3 retort-house has settings on the regenerative system. There are nineteen beds of eights, or 304 mouthpieces. All the retorts are 22 inch by 16 inch by 20 feet through.

At the time of commencing the No. 3 house (Monday, Aug. 18, 1902) men were wanted to work the machines, and others as assistants. The best of the hand stokers were given a chance of going on the machines; but most of them refused. So younger men were put on; the older hands choosing to stay with their "old loves"—the rake, the shovel, and the barrow. With a little thought, one can readily understand why it was so—the movements of the "iron men," and other work attending them, seemed to make such an impression on their non-mechanical minds that they were afraid to take charge of them. This kind of antipathy did not last long. The back of prejudice was soon broken. When sufficient beds were got ready in this house to supply the demands of the consumers, the settings in the old retort-houses were let down, and the much-endeared shovel, rake, and barrow forsaken. Then cries were soon heard for employment on the "iron men," who they could see had come to stay. If I could give the same excellence to the working of the ascension pipes, hydraulics, and foul mains, as I can to Messrs. West's stoking machines, I should not be addressing you this afternoon; and I certainly should have been short of an experience that has been beneficial to me, and made some lasting impressions on my mind.

The settings had not been working a week before we began to have trouble. The pipes were making-up, and pitch was forming in the hydraulics. It so happened, owing to the stock of gas in the holders at the week-end, a stop had to be made on the Sunday morning; and advantage was taken of the stoppage to examine the hydraulics and the take-off valves carefully—only to find, what was anticipated, that they were making-up with pitch, and signs of it getting into the foul main. Beyond the examination of the hydraulics, no advantage was gained from the stoppage. As a matter of fact, things went worse. The valves in the centre of the hydraulics were opened to flush off the tar, which, being so thick, ran very slowly. The result was the liquor made its way more quickly, and would lower the seal on the pipes. It was impossible to flush off the tar through these valves, owing to the length of the hydraulics. There are six lengths of hydraulic mains on each side of the retort-stack—three beds to each of five lengths, or 33 feet for each hydraulic, and four beds for the sixth length, 44 feet long.

You will readily understand, with only one valve in the centre, the difficulty experienced in flushing-off the tar. As there was no separate tar-main at the commencement of this house, these valves regulated the seal and formed the outlet for gas, tar, and liquor, which overflowed into the foul main. Working in this way soon began to show trouble; the heavy seals causing the water syphons to make-up with pitch forming in the hydraulics. Having lost the seals, it became quite alarming to go on the retort-stack. Caps were being blown from the top of the ascension pipes, and flames issuing out 3 or 4 feet in height. The caps are small ones, and loose, fitted in position by a luting joint. About this time eight beds were working, with four pipe men per shift. By the time all the 19 beds were in operation, I had eight pipe men per shift for several days trying to get ahead of the work. To clear the hydraulics, sharp bars were thrust down the dip-pipes to cut away the pitch; and benzol was poured down to dissolve it. The hydraulics on this side being cold, it was necessary to partially close the valve on the opposite hydraulic so as to force the gas back through the cold one. In this way the hydraulic could be got to work at times, though great caution had to be exercised when using benzol. Relief has also been obtained by pouring black grease into the hydraulic.

It is truly said that necessity is the mother of invention. There was great necessity here; things having almost reached a crisis. My chief, Mr. Duxbury, gave me a free hand to try whatever I thought best to overcome the difficulty. I was determined not to stop gas making, as this does more harm than good. I succeeded in my resolve by inventing a small machine to place down the dip-pipes and cut away the pitch. This is shown in fig. 1. The bottom is a tube 4¾ inches diameter by 12 inches long, made of mild steel, with holes round the top half to allow the liquor to run back when lifting the machine out of the dip-pipe. Inside, at the top, is riveted a cross-bar, with a ⅞-inch hole in

the centre. The two flat side rods attached to this cylinder are 4 feet long, with a cross-bar, forming handles, riveted on the top, 15 inches long. A $\frac{7}{8}$-inch hole is drilled in the centre of this cross-bar to engage with the hole through the cross-bar in the cylinder. Through these $\frac{7}{8}$-inch holes is placed a round rod 5 ft. 9 in. long, on the top of which is fastened a cross-bar handle 15 inches long. On the bottom are riveted four propeller blades the full diameter of the cylinder. When the machine is placed down the dip-pipe, the cylinder part is held firm, and the rod with the blades attached is turned round, when the blades cut into the deposit, which enters the cylinder until the machine gets to the bottom of the hydraulic. It is then lifted out, when, by lowering the cutters from the bottom of the tube, the deposit can be cleared off and the cylinder again inserted. To keep the cutters in position, a hole is drilled through the $\frac{7}{8}$-inch rod just over the side rods cross-bar for a cotter to go through. When emptying, the cotter is taken out.

Other tools are now used to remove the deposit which remains between the dip-pipes and bring it immediately under the pipe for the machine to get out as much as possible. This method was adopted at every pipe; and in a very few days I was able to dispense with several men on the hydraulics. There was one

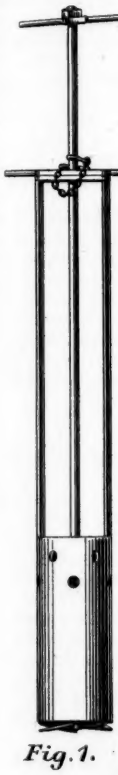


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

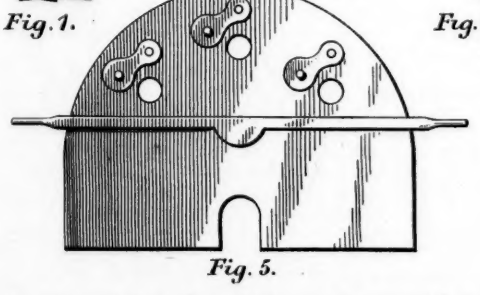


Fig. 5.

particular place at the valves which caused very much trouble. A projecting shell, forming a portion of the valve, enters the hydraulic. The top is the gas outlet; the bottom portion the outlet for tar and liquor. It was here where much of the mischief arose when the hydraulics began to pitch up. The bottom of these shells became blocked also. The outlet for the tar and liquor being made-up, the seal naturally became deeper, and overflowed the top of the shell. In order to clear this part of the valve, a hole 1 inch in diameter had to be drilled through the top of the hydraulic. Tools were made to cut away the pitch until the shell was cleared and the seal set right. These outlets were constant sources of trouble until the tar-mains were got to work. We managed to tide through the winter without stopping, though the hydraulics and pipes were very troublesome.

In February and March, 1903, I obtained a little relief by having to let a few settings down. On April 12 No. 1 hydraulic and valve on one side was found to be completely blocked up. The machine was got to work; the bottoms of the dips were cleaned; the valve controlling the opposite hydraulic was partially closed—the gas being forced back through this cold hydraulic dissolved the remaining deposit; and in three hours' time it was in good working order.

One important feature in the successful working of hydraulics where there are through retorts, is to take notice which way the gas is flowing. It does not follow that both hydraulics are working. A difference in the depth of the seal will send the gas all one way; the result being that the hydraulic not working gets cold, and the pipes become dry. As soon as the men find this taking place, the course of the gas is diverted, and things put right in a few minutes. There is a 2-inch flanged branch on the foul-main opposite each valve. Holes 1½ inches diameter were drilled in the 8-inch blank flanges, so as to admit a small rake for cleaning out the valve. On May 7, when examining these outlets, it was found that much thick tar was getting into the foul-main and passing along the pipes to the hot scrubbers, choking up the syphon and cisterns, which gave considerable trouble there. To try and clear the foul-main on the stack, I fixed a ½-inch jet of steam, with nozzle attached, looking down the pipe through these plug-holes alternately; and though the pipe inclines from end to end, the force of the steam-jet failed to send the tar forward.

In the meantime, we were pushing on with the erection of the tar-main. It was now October, winter was approaching, 13 of the 19 beds were working, and I was having considerable trouble with the pipes and foul-main making-up on one side. To clear the foul-main was my first resolve. To do this, ten hand-holes, 12 in. by 6 in., were made in the side between No. 1 and No. 6 hydraulic valves. The holes were marked off; and around these lines about 66 $\frac{3}{8}$-inch holes had to be drilled for the centre piece to be cut out. As the foul-main was working, every hole had to be plugged with a small wood plug, driven well in. When these holes were finished, ten plates, 16 in. by 9 in., were prepared to the radius of the pipe. Six holes were drilled in each plate to receive ½-inch set-screws. The plate was put on the foul-main over the plugged holes, and the holes in the plate were then scribed off on the main to be drilled, tapped, and plugged ready to receive the cover plates when the holes were cut out, and secured in position by the set-screws.

Everything having been got ready to clean out the main, the six hydraulic valves were closed, the hydraulics flooded, the two foul-main valves at each end of the house closed, and special precautions were taken to keep the hydraulics and pipes clear on the other side. At nine a.m., we began to cut away the blank pieces round the holes which had been drilled and plugged, and the main was cleaned out; the greatest obstructions being found between No. 3 and No. 6 valves. The joints were all made, the cover plates put on, and the hydraulics working by six p.m. the same day. A good cart load of pitch and tar was got out of the main. The hydraulics and foul-main having been set right, the ascension pipes continued to give a lot of trouble. On one occasion the foreman called my attention to a quantity of small pellets, about the size of peas, that had been taken from the top of two or three of the ascension pipes, just about the bridge, together with some soot in the form of lamp black. The formation of these is somewhat interesting. It is evident, I think, that a certain amount of moisture or tarry globules must have been formed on the sides at the top of the pipes previous to their getting hot, and solidifying to their present form. The pipes in the first instance must have been almost completely made-up at the top.

A thin oscillating stream of gas would cause these beads to continually roll about and increase in size; the pipes eventually becoming made-up by the deposit. I tried all sorts of experiments—dripping water down the pipes, putting a vessel of water inside the mouthpiece, pouring grease down the pipes, and burning greasy waste in the mouthpiece at the bottom of the pipe. The two latter methods assist materially in clearing the pipes if one could allow the retorts to stand off for some hours; but when the stock of gas is getting low, and the retorts are wanted, something more efficacious is required. Hammer and chisel bars are employed to drive through the obstruction from the top of the pipe, and special augers were made to follow the chisel bars to try and bore a way through. Red-hot bars were also used to burn a hole through, so that a current of air would pass up the pipe. But all these and other methods were of little advantage.

Those who have had experience know that if a hole is bored through the deposit in the pipe, and the lid is left partly open, with the cap off the top of the pipe, a fairly good current of air can be got to pass through. This heated air softens the obstruction, which, after a time, begins to run down into the mouthpiece, takes fire, and burns out the pipe. By using the bobbin, the pipe can then be cleared. The process is very slow indeed, and necessitates much waste of time. On Feb. 3, 1904, I asked permission from my chief to lay a ¾-inch iron service and fittings on the wall along each side of the retort-house, and try a further experiment for opening the pipes. I thought, by increasing the current of air through the pipes, I might burn them out more quickly. The fittings were laid and connected up to the compressed-air supply. One end of a flexible tube was attached to the supply on the wall, and a piece of ¾-inch iron-pipe, about 10 feet long, connected to the other end of the flexible tube. The extreme end of this iron pipe was bent a little, so as to point up the ascension pipe in the mouthpiece. I found, when turning on the compressed air, that it cooled the pipe, instead of assisting to burn it out, on account of the air containing moisture. I then had another pipe bent U shape, with a short and a long leg; the end of the short leg being bent to point up the pipe, the U portion to enter the retort. This also failed to absorb the moisture. My next resolve was to arrange a blow-pipe as shown in fig. 2.

A piece of 2-inch wrought-iron pipe, 3 feet long, is welded up at one end, and screwed at the other end to receive a 2 in. by ¾ in. T-piece, a 2-inch nipple, and a 2-inch to ¾-inch diminishing socket. Through this diminishing socket is connected a ¾-inch supply pipe, 10 feet long, to within 6 inches of the welded end inside the 2-inch pipe. A short piece of ¾-inch pipe, about 15 inches long, to form a nozzle, is now connected into the ¾-inch part of the 2 in. by ¾ in. T. The flexible tube is again attached to the end, and the welded end of the 2-inch pipe is pushed in the retort among the coke, and the nozzle, which is 3 feet from the end and attached to the T-piece, is pointed a little way up the ascension pipe. The air being turned on, it passes through the ¾-inch pipe to the far end of the 2-inch pipe, which, being hot, absorbs the moisture, and heats and expands the air—so much so, that if there has been only a small hole through the obstruction in the pipe, it has been thoroughly cleared and the retort working very often in 15 to 20 minutes, whereas, in the old method of burning-out, I have known them to be off for more than 20 hours. This machine must not be used unless there is an opening through the obstruction, as it is likely to cause a fracture by the backing of the flame, which is very intense. When there is a clear road, it will send most of the obstruction out at the top of the pipe.

After taking out the machine, the pipes can be effectively cleared by using the tool shown in fig. 3 from the top. I have employed various tools or augers for opening the pipes at the bottom; but none has been more useful than the old design of auger, with a cross-cutter attached (fig. 4)—a little improvement I added to make it cut four ways. It is an advantage to the men to keep the auger hot when opening pipes, as it then cuts its way better, besides facilitating the work.

I might mention here that I have tried compressed air for scurfing both fire-clay and section retorts, but cannot advise its use. The joints and cracks suffer materially, and require much more patching-up than when they are scurfed with chisel bars. Our through retorts are often scurfed and charged in one hour; and I may mention that during the last two years, out of a total number of charges of about 325,000 we have only lost 18 through scurfing, and only one retort during the same period has had to be bricked up owing to some bricks dropping out of the arch, which occurred on Feb. 9 last.

When scurfing retorts in April, 1907, the men came across four top centre retorts where the floors had sunk. As the retorts immediately under remained good, it was evident the 4½-inch course upon which these rested could not have been properly burnt. The arches remained good. The floor of one in No. 19 setting sank 3½ inches 14 feet through; the other three about half-way through. To make them good, I filled them in with burnt fire-clay rubble, about 1-inch cube, and grouted up with "Korktite," which put the retorts in good condition for some four or five months. The experiment was not altogether successful; the formation of scurf in the retort since having eaten into the rubble, so that in scurfing the retorts the next time large pieces came out with the scurf, and had to be filled in again with the cement. In the direct-fired retorts, which have a wall in the middle, the scurf is more difficult to get out. Instead of the brick wall, which is built in the mouthpiece when burning out the retort by the aid of the customary cast-iron pipe to direct the current of air, I have arranged a lid similar to fig. 5 to fit over the iron pipe, which can be attached in two or three minutes, with sight holes to watch the burning-out process. This certainly facilitates the work very much.

In respect to long hydraulics, to which I have previously referred, I wish to point out the importance, in my opinion, of having separate hydraulics for each setting, as then the expansion or contraction of one setting does not materially affect the next hydraulic. The expansion or contraction is not always the same—sometimes upward, other times downward. If so, then, in the case where long hydraulics are used, there must be, and is, a difficulty in setting the seals or dips. The upward expansion lifts one end, which gives light seals, and heavy at the other end. Outward expansion, which means shrinkage, lowers the hydraulic possibly at both ends; if so, we then get light seals in the middle. In short hydraulics, whether the expansion is upward or outward, the seals are more reliable. They may add a little extra to the cost per mouthpiece in the first instance; but the advantages obtained are numerous and beneficial to all.

The arrangement of the hydraulics in our No. 1 and No. 2 retort-houses is very peculiar. There are four stacks of ten sets of sixes. No. 1 stack has two hydraulics a side, 49 feet long, with 5½ sets, and 40 feet long, with 4½ sets; No. 2 and No. 3 stacks are the same; No. 4 consists of six hydraulics, with 3½ (½ and 2½) and 3½, 31 ft. 6 in., 26 ft., and 31 ft. 6 in. respectively. Why there should be the half-sets to the hydraulics I cannot tell, as it entails considerable trouble at times, both in getting-up and letting-down a certain number of retorts. Possibly, only half of the settings are wanted in the hydraulic. This being so, all the remaining dips want plugging, and require attention every day to see that the plugs are right.

The whole of the hydraulics in these two houses are ⊔ shape; the outlets for the gas, tar, and liquor are at the ends. At the commencement of No. 3 house, the outlets were at the side. Now ten of the twelve have them on the top; the remaining two (as yet in the experimental stage) have two additional pipes, besides the valve, fitted on the side. From the experience I have had with all three methods, I certainly think the top is the proper position for the gas-outlet. At the ends and side there is the danger of drawing off the seal by excessive exhaust; while at the top this cannot happen on account of the distance from the seal to the top plate where the pipe is attached. The more central the exhausters are to their work, the better should be the results obtained. Our exhausters are 630 feet from the centre of No. 3 retort-house; the gas, in addition, having to pass through three sets of tubular condensers and two hot scrubbers.

During the winter season, when No. 1 house is working, I experience great difficulty in exhausting the gas. The tar and liquor having to flow through the same valve, the 15-inch valves on the foul main in this house (which is 400 feet from the exhausters) have to be closed down to within 1½ inches from the bottom, to allow sufficient exhaust for No. 3 house, 230 feet further away. Any excess of speed instantly displaces the seals in No. 1 house; and in case the engines should slow down, No. 3 house suffers very much from smoking lids. I think this is a striking illustration of the importance of having retort-house governors—an accessory to retort-house fittings which is proving beneficial wherever adopted.

As I have previously mentioned Sunday stoppages, I wish to say they have given me the greatest of trouble, more especially on the regenerative settings, where high heats prevail. If it is possible to avoid them, we try to do so. However well settings are working, a stop of eight hours or more is detrimental to them. It, of course, materially interferes with the illuminating power for the time being in slowing-down and restarting; and during the stoppage one gets back-pressure in the retorts, which means accumulation of carbon deposit. It entails a considerable amount of extra and unnecessary work upon the men. The pipes that were working in good condition previous to stopping often become dry, and are more liable to choke up when re-starting. We have to suffer also from leaking retorts and from a smoky chimney for a time.

It is important that our retort-houses should be well looked after. The best materials should be used in settings, and should be ground well and have a fine fibre, and well burnt, to avoid shrinkage. One of the worst things a manager has to do is to complete work in his settings that should have been done in the makers' kiln. Keep the fittings on the retort-stack as simple as possible. Do not use new mechanical and complicated hydraulics and tar-pipes. If they should get pitched-up at any time, you will regret their adoption. The simplest forms are the best and the easiest to keep in order.

Discussion.

The PRESIDENT said they had had a very interesting paper, which gave them ample scope for discussion. He (the President) had had some experiences of the retort-house, but not so much as Mr. Dudley in the class of work of which he had spoken.

Mr. TAYLOR (Hollinwood) said he had had a lot of trouble in the matters of which the author had given them his experiences. They had had to open the dip-pipes at Hollinwood in order to clear away the accumulations, but had never met with the same difficulty as Mr. Dudley. Owing to leaky valves, they once had an explosion with the hydraulic on fire; but by the exercise of a little caution, this could be avoided. In regard to the author's observation that the top of the main was the best outlet for the gas, perhaps this was so; but they could not lay it down as a general rule. If the gas taken off was on the water-level, he did not think any difficulty would be experienced. The paper which had been read was a thoroughly practical one, and would be found useful to members of the Association.

The PRESIDENT said it was not every member of the Association who could give like experiences of a retort-house. Personally he had not had much trouble, except a little difficulty with inclines; but this he overcame by adopting the lines mentioned in the early part of the paper. He was of opinion that at Higginshaw the exhausters were at too great a distance from the retort-house. He thought it better for tar and liquor to be taken off separately than together. Every credit was due to Mr. Dudley for his skill in mechanics. The models of tools he had exhibited, with which to carry on his experiments, were very ingenious. After seeing fig. 5, he should adopt the plan of drilling holes in the lid in order to find out what was going on inside. He agreed with Mr. Dudley that there should be separate hydraulics for each setting. At Hebden Bridge, they had one hydraulic for three settings, and had great difficulty in maintaining the seal in the three beds.

Mr. GARLICK (Salford) said the paper was full of practical points, and should encourage members to come forward and read papers. They had been given a good insight into the difficulties which arose in many gas-works—not at Salford, where they took great care with regard to their hydraulics, which, in some gas-works, might be too near the top of the beds. At Salford, they had plenty of space. As to shorter hydraulic mains, he thought the observations on this point were very good indeed. They had arrangements at Salford to take off the tar and liquor. The liquor was run off first, and the tar remained. The top water maintained the seal. They had no practical difficulty at Salford to contend with. The Association, however, required more papers of the class which had been read. As medals for papers were being offered, members should come forward and give their experiences. Mr. Dudley evidently possessed great mechanical ability.

Mr. TEASDALE (Salford) said they wanted to get at the causes of evils. There was a proper method of taking the tar and liquor

away. As to the outlet for gas, it did not matter whether it was at the top or at the side of the hydraulic, so long as the seal did not run out. Personally he had had no difficulty, except with the ascension-pipe. At Salford, they had a bridge-pipe with a cover over both. This they took off when trouble occurred.

Mr. STODDARD (Manchester) said the paper was very interesting; but they could not realize what had been done so well from the written description as they could if they saw the works. At Manchester, they had plenty of room for their hydraulics. The heavier the charge was, the better. He considered the use of benzol dangerous; creosote oil was better.

Mr. SHILL (Oldham) said he could endorse all Mr. Dudley had said. There was no doubt about the efficacy of the system.

Mr. DUDLEY, in reply, remarked that there seemed to be a difference of opinion as to the gas-outlet. He had expected it. He was still of opinion that the outlet was best at the top. Retort-house governors might be used with advantage with other outlets; but the top outlet did not require them. Their retort-house at Higginshaw was fitted up to the point of originality. It was not often now they had a stoppage; but it did occasionally happen. It was seeing the trouble the men had in getting out the bricks that led him to make the lid and holes which they had seen.

On the proposition of Mr. BERRY (Hyde), seconded by Mr. HODGSON (Hurst), a vote of thanks was heartily accorded to Mr. Dudley for his paper.

Mr. DUDLEY, in acknowledging the compliment, said if what he had written had proved helpful and interesting to them, he considered himself amply repaid.

The PRESIDENT announced that on the occasion of the next meeting (April 11), they would visit the Warrington Gas-Works.

Conveying Smoke from Retort-Houses.

In consequence of complaints by residents in the vicinity of the Versailles Gas-Works of nuisance caused by smoke and dust emanating from the retort-house, the Manager (M. Alayrac) devised an arrangement which appears to have got rid of the trouble. According to an illustrated description in a recent number of "Le Gaz," the retort-house is surmounted by a metal cowl which terminates in a chimney about 100 feet high. There are no openings in the roof, but four are arranged in the side walls in the front of the bench of six settings of through retorts. These openings can be closed by sheet-iron doors when charging is finished. By means of pentices, the outer air is drawn into the retort-house under the influence of the chimney draught; and all the smoke arising during charging is driven upwards. The steam produced in the conveyor by the quenching of the coke acts mechanically upon the heavy smoke, and causes its solid particles to deposit upon the sides of the cowl. The issuing smoke is consequently less dense, and is merely a yellowish vapour. It is stated that by this simple device the retort-house is clear of smoke five minutes after the retorts have been charged.

Statistics of Dutch Gas-Works.

Heer P. Bolsius, the Manager of the Bois-le-Duc ('s-Hertogenbosch) Gas-Works, sends a copy of an exhaustive statement he has compiled as to the working results for the year 1906 of all the municipal and many of the privately-owned gas-works in Holland. The *brochure* is printed for private circulation; but, naturally, it contains in a readily accessible form many data of general interest, and some figures which are probably not to be had in any other like publication. The particulars given relate to 123 Dutch gas-works, and are comprised under the following principal headings: Manager's name, date of inception, population of district, coal and other raw material used in gas making, make of gas, holder capacity, number and description of retort-settings, particulars of water-gas plant, illuminating and calorific power of water gas, proportion of gas sold for street lighting and to ordinary and prepayment consumers, gas-engines in use, coke, tar, and ammonia produced, details of public lamps, meters in use, price of gas, distributing pressure, length of mains laid, purifiers and purifying material, illuminating power and calorific value of gas and mode of testing, and fire insurance of works. There are a number of sub-headings in most cases. The labour involved in collecting and arranging systematically so great a mass of particulars must have been immense. There is an appendix giving supplementary data and explanations in regard to many works. Heer Bolsius is to be heartily commended for having brought his labours to such a successful issue.

According to an article in "L'Engrais," noticed in the "Chemical Trade Journal," the production of sulphate of ammonia in Germany has more than doubled—*i.e.*, from 140,000 to 287,000 tons—within five years.

A strange use for gas tar is recorded in "Country Life." It appears that in Poland the rearing of tame geese has attained enormous proportions; and they are sometimes driven distances ranging from 60 to 150 miles to market. To enable their feet to stand the wear and tear of such a march on hard roads, they are "shod" by being first driven to and fro in melted tar, and then made to walk through fine sand. In this way they are supplied with what is described as "a rough-and-ready footgear which serves them in good stead."

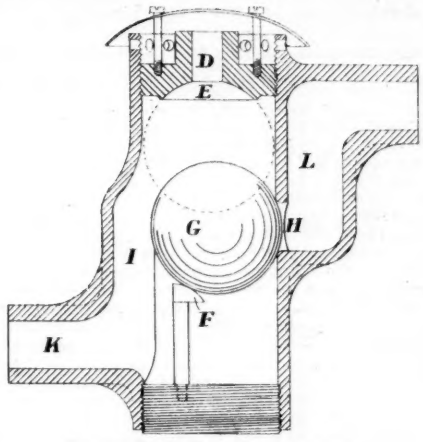
REGISTER OF PATENTS.

Preventing the Registration of Air by Water-Meters.

GOVER, E. W.; a communication from E. C. BUCK, of Pretoria, Transvaal.

No. 3800; Feb. 15, 1907.

This valve apparatus for water-mains is intended to enable air to escape to the atmosphere and prevent it passing on beyond the valve apparatus—in other words, to prevent the registration of air by water-meters. It consists of a vessel connected in the main so that its inlet is below its outlet. A ball of less specific gravity than water is arranged in the vessel, so that when the valve is not afloat the water-outlet is sealed, and a suitable air-outlet remains open; but on water entering the vessel, the water-outlet is not opened until the water level has risen above the outlet—the valve subsequently rising and closing the air-outlet.



Buck's Water-Meter Arrangement.

In the example shown, the cylindrical vessel is fitted with plugs or caps at its upper and lower ends respectively; the upper plug being formed with an air-outlet D and spherical seating E of a ball valve. The lower plug is provided with means F for supporting the ball G in a position against a seating surrounding the water-outlet H. In some cases the lower plug may be dispensed with, in which case the support F may be adjustably fixed in the integral bottom of the vessel, which may have a suitable outlet for flushing out sand or other deposit. There is a vertical channel I, open to the cylinder and to the water inlet K, which extends upwards to a certain point below the upper plug so as to facilitate the passage of fluid past the ball, which is of a diameter approximating to the internal diameter of the cylinder. The water-outlet communicates with a passage L, which extends upward to a point at which the water level would cause the ball to close the air-outlet D—the passage then proceeding in the required direction.

When no water is entering the cylinder from the main, the ball resting against the seating at the water-outlet closes it, and compels any air driven by the approaching water to ascend the cylinder and escape at the top; but as soon as the water enters the cylinder to a level above the water-outlet, the ball floats until the rising water causes it to close the air-outlet (as indicated by dotted lines), so that only water unmixed with air can pass through the outlet.

Recovering Sulphur from Gases containing Sulphuretted Hydrogen.

HELLSING, G. H., of Rabäck, Sweden.

No. 8164; April 8, 1907.

This invention relates to a method of recovering sulphur from sulphuretted hydrogen, and gases containing sulphuretted hydrogen, by using the reaction between sulphur dioxide and sulphuretted hydrogen. It is characterized by the fact that a solvent of sulphur dioxide always containing a surplus of free sulphuric acid is continually used; and it is founded on earlier patents—No. 955 of 1878, No. 5230 of 1882, and No. 15,007 of 1886. The novelty consists in certain detail arrangements for mixing the solution and gases more intimately and in arrangements for continuously using the same solution.

Supposing the process to be carried out in such a manner that the gases are caused to pass a more or less saturated solution of sulphur dioxide, either in a scrubber or other corresponding apparatus, whereby they are freed from sulphuretted hydrogen, sulphur being obtained in the solution partly precipitated, partly in a colloidal state, as well as thiosulphuric acids, the purpose aimed at is attained, according to this invention, in the following manner: The same solvent for the sulphur dioxide is continually used during the whole course of the process, with the exceptions due to the necessity of compensating for evaporation, and the fact that the solution must be renewed when containing too great quantities of ammonium salts, which will finally occur in using azotic raw materials. The method can be carried out in such a manner that the solution, after having passed the absorbing apparatus, runs into a receptacle in which precipitated sulphur is allowed to settle. The solution, thus freed from sulphur, is then pumped into an absorbing apparatus, where it is again saturated with sulphur dioxide. When this has occurred, the solution is again led into the apparatus for absorbing the sulphuretted hydrogen to continue the same cycle as before.

In this way, the solution of sulphur dioxide supplied to the apparatus will always contain thiosulphuric acids to such a degree of concentration that new formation of such acids is made impossible, and loss of sulphur in this way is, thereby, avoided. Another consequence of the method is that the solution will always be saturated with colloidal sulphur, and losses in such a form will thus be excluded—all new-formed sulphur being directly precipitated. Nevertheless, it is in this process, where sulphur is to be recovered, a disadvantage to have to deal with any colloidal solution of sulphur; and in order to avoid this, the solution of sulphur dioxide employed should, from the beginning, always contain coagulating substances to such a concentration that all sulphur will be directly precipitated. In those cases when, on account of the nature of the raw materials employed, the solution will not within a sufficiently short time itself contain coagulating substances in a degree of concentration sufficient for the precipitation, these substances should be added. Substances available for the purpose are "an acid, a salt, or any electrolytically easily dissociable combination which is indifferent in relation to the chemical reactions taking place in the solution and the materials contained therein." However, in the present instance, the most profitable substance is said to be sulphuric acid, which is added in such proportions that the solutions will always contain a surplus of sulphuric acid,

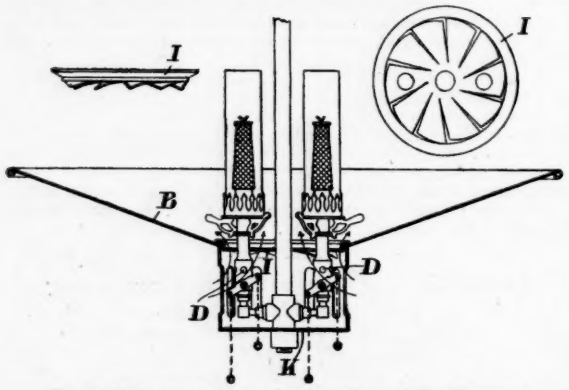
Incandescent Lamps for Diffusing Light.

FAIRWEATHER, W. C.; a communication from J. HARDT, of Hamburg.

No. 6323; March 15, 1907.

This invention relates to incandescent gas-lamps for giving diffuse illumination, wherein the light rays of incandescent burners are thrown by a reflector against the ceiling, or any wall-surface of a room to be illuminated, and are distributed over the room by the roof or surface, which reflects them diffusely.

In many previous constructions for illuminating by reflected light instead of by direct light from the lamp, the burner itself was enclosed by an opaque shade or reflector in the form of an inverted truncated cone for reflecting the light upwards on to a shade arranged above, for the purpose of deflecting the light downwards into the place to be illuminated; but in such constructions, the patentee remarks, "the apex of the reflector was interrupted for the purpose of admitting fresh air into the reflector space—the interruption being screened against the passage of light." The invention is said to be based on the discovery that the amount of air between the reflector and the reflecting roof or wall is strongly heated, and is drawn in either not at all or only slowly—that is, the lamp is surrounded for a long time by the same air, which has already lost some of its power to assist illumination owing to the consumption of its oxygen. This disadvantage can, it is said, be largely avoided by mounting the suction chamber of each burner with the air-inlets outside the reflector which throws the light rays against the ceiling, because then fresh air for combustion will always pass to each illuminating flame, which latter will, however, always be surrounded by a layer of very hot air, poor in oxygen. This layer of air is scarcely removed by a roof outlet; for as soon as the upper volume of air begins to flow through the outlet, air flows from all sides, and prevents the quantity of air within the reflector and surrounding the lamp from rising. Besides, in many cases it is almost impossible, and in any event difficult and costly, to provide roof outlets.



Hardt's Diffusion Reflector for Incandescent Gas-Burners.

The recognition of these circumstances has led to the idea of driving away the foul hot air from the apex of the reflector and replacing it by fresh air. In reducing this idea to practice, care had to be taken that the foul hot air should be driven away from the apex of the reflector, but that no light rays should pass through the apex of the reflector directly into the room to be illuminated, "because its glare would destroy the soft and uniformly clear illumination produced by the diffused reflection." There is therefore provided an interruption in the apex of the cone, through which fresh air can pass into the reflector to drive away the foul hot air; and the lamp is so screened from below that no light rays can pass through the interruption.

In the construction shown, the apex of the reflector B is formed of a base I provided with slots, which are confined by inclined blades or wings, and are so covered that light rays are prevented from passing through them. Beneath the reflector base is a chamber K, provided with a ball, through which fresh air can enter so as to pass through the bottom slots into the reflector. The chamber may enclose the suction-chamber of each burner-tube, with its air inlets D, so that they are outside the space enclosed by the reflector.

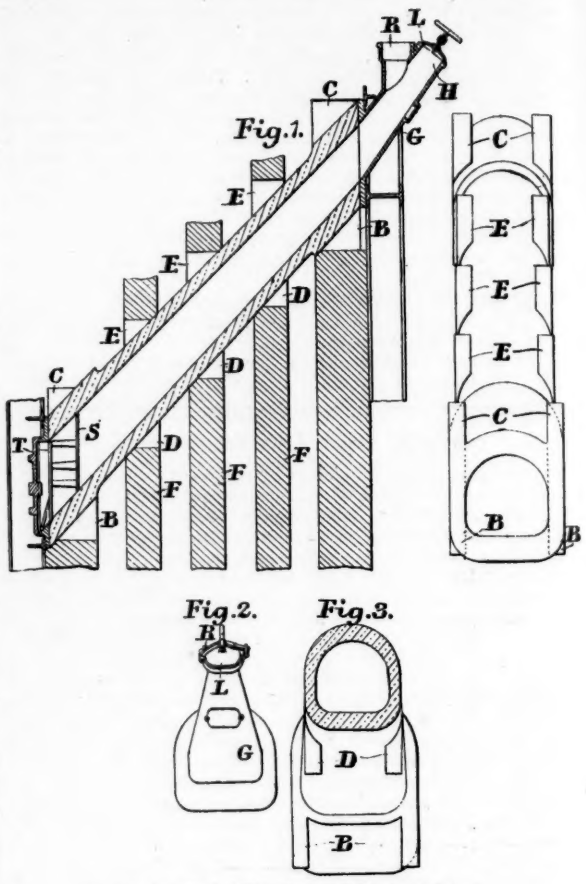
In this way, the effect is obtained that fresh air always enters the reflector space, expels the air which has been already used, renovates it, and circulates round each of the burners in a warmed condition, because the continuous inflow of air is so slow on account of the resistance caused by the volume of air between the roof and the reflector.

Inclined Gas-Retorts.

LOVE, G. R., of Guildford, Surrey.

No. 9859; April 27, 1907.

This invention consists in "the combination of a coal-charging and gas-tapping mouthpiece of diminishing diameter with an inclined retort having feet adapted to rest on the end walls and intermediate piers, and to provide for superimposed retorts; the mouthpiece making the substantial upward angle with the retort in order that the retort may be completely filled with coal from end to end without the use of a shoot."



Love's "Forty-Five Degree" Inclined Retort.

Fig. 1 is a sectional side elevation and a front elevation of the retort. Fig. 2 is a view of the mouthpiece. Fig. 3 is a cross section of the lower part of fig. 1.

The ends of the retort (which is set at a considerable inclination) are provided with feet B, the bottoms of which are horizontal and rest on the front and back walls of the setting, and the sides of which extend vertically upwards to form corresponding ledges C on the upper side, to support the corresponding feet of another retort, or to provide the bed for the front and back walls to the arches of the oven roofing. Similar feet D, and ledges E, are provided for the intermediate supporting piers F and the roof arches or intermediate feet of the next retort above. These feet are made as narrow as possible (consistent with strength), in order that the heating surface shall be reduced as little as possible, and to avoid unnecessary increase of weight, and are built into the walls.

In retorts set at a small angle as usually constructed, the patentee points out, the mouthpiece is made large enough to take the charging shoot, and the coal is charged in a layer on the bed of the retort from end to end, leaving a free space between the coal and the crown of the retort. With retorts set at a greater angle, the coal is charged in to completely fill the retort; and therefore a mouthpiece large enough to admit the shoot is not necessary. The retort shown is intended to be operated by charging it fully—leaving no free space between the top of the coal and the crown of the retort; the gas finding its way to the outlet through the centre of the mass of coal, "whereby it is given off at a lower temperature with less deposition of tar, while the yield of gas per ton is increased and its quality improved."

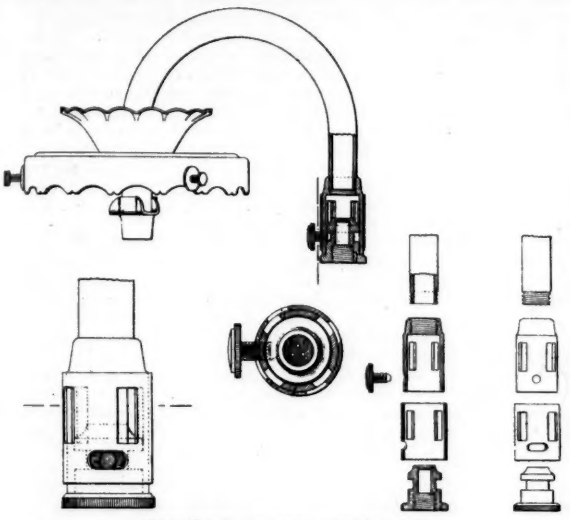
The mouthpiece G has a relatively small inlet H, and is tapered out to suit the dimensions of the retort where it joins on to the latter. The mouthpiece is connected to the retort, preferably by a flange, in such a manner that the angle of the mouthpiece will be greater than that at which the retort is set. A small inspection door is provided in the front of the mouthpiece, preferably near the middle. The end door of the mouthpiece is hinged with a double jaw, preferably cast on the mouthpiece and provided with a bridle and screw carried down through the lid. The end is made gas-tight in any convenient way, as, for instance, by providing it with a nut, or by riveting over. The usual form of off-take R for the gas is provided. The lower end of the retort is closed by a stopper composed of two plates ST, kept some distance apart by studs, in order to keep the coal away from the lower end of the retort, which is cooled by radiation. By this means, it is said, the coal is kept on the hot portion of the retort.

Incandescent Gas-Burners.

WAKEFIELD, H., of Birmingham.

No. 14,161; June 19, 1907.

This invention relates to burners of the inverted type, in which the air-inlet or bunsen part of the burner is arranged in an upright position, and connected to the depending outer end of an arched or bowed burner supply-tube, the inner end of which is connected to the air-inlet fitting. In such arrangements the tube should have a free swivelling action with respect to the fixed gas-inlet nozzle or nipple which is surrounded by the air regulator fitting, so that the burner-head may be turned into any position required. This has previously been effected by forming the sleeve in which the air-inlets are provided (and which constitutes a mixing-chamber for the air and gas) with a vertically extended narrow neck part, which fits into an enlarged end of the burner supply-tube, and is swivelly connected to it by a set-screw passing through the tube so as to engage with a circumferential sinking or reduced part formed around the extension.



Wakefield's Incandescent Burner.

The principal object of the present invention is to provide an improved form of burner in which the bunsen part is fixedly connected to the air-inlet chamber or sleeve of the supply-tube, and forming the swivel connection between the gas-inlet nipple or nozzle and the lower end of the sleeve, preferably by means of a set-screw engaging in an annular groove, and which is also arranged to form a limiting stop for the ordinary rotatable air regulator sleeve provided with piercings adapted to be brought more or less into register with the air-inlet holes in the mixing-chamber.

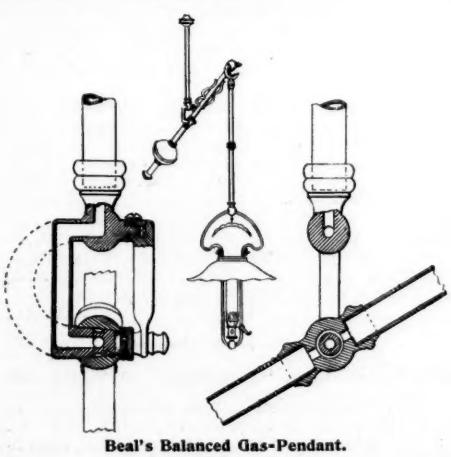
The illustration shows a part elevation and sections of an inverted burner with the swivel connection; also the parts of the fitting disassembled.

Gas-Pendants.

BEAL, W., of Birmingham.

No. 14,884; June 29, 1907.

This invention has reference to gas-pendants of the type described in Best's patent specification No. 6907 of 1893, where an inverted or upright burner is arranged at the bottom of a pipe which, at its upper end, is jointed to one end of a lever, which at the other end carries counterbalance weights. The fulcrum of the lever is jointed to the bottom end of a down tube, or to the outer end of a side bracket, at an intermediate position between the two outer ends of the lever; so that the pendant-light can be moved up or down or swung round the central down tube or bracket to various positions.



Beal's Balanced Gas-Pendant.

The lever is usually formed of two tubes arranged side by side, with the fulcrum joint and the end tube joint leading to the burner arranged centrally between the two tubes forming the lever; or, if the lever is made of a single tube, the fulcrum joints of the lever and the end joint of it are arranged at one side of the lever; so that the weight of the burner, and the shade and fittings connected with it, tends to twist the single tubular lever sideways, because the joints are at one side. The object of the present invention is (as shown) to so arrange the fulcrum joint and the end joint of the single tubular lever of the gas-pendant that both the central down tube or bracket and the end tube leading down to the burner will be central with the single tubular lever; and thus side-twisting strains on the latter will be prevented.

Controlling the Flow of Gas through Condensers, Purifiers, &c.

R. DEMPSTER AND SONS, LIMITED, and HORSFALL, J. E., of Elland.

No. 11,091; May 13, 1907.

This invention—particularly applicable to valve boxes of the "Weck" type, and consisting in an arrangement for reversing the direction of the flow of gas, and for entirely disconnecting at will the whole or any one or more condensers, purifiers, &c.—in consecutive order, in cases where more than one are employed—was described and illustrated in the "JOURNAL" for July 23 last year, p. 228.

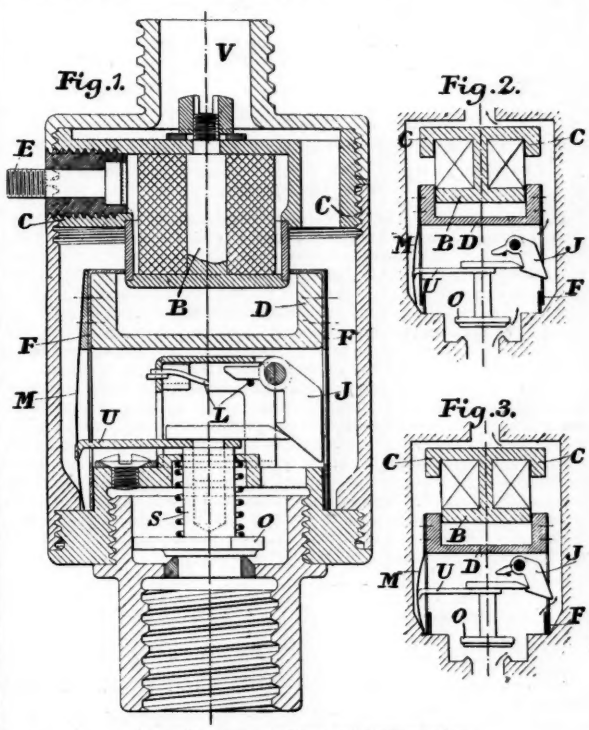
The claims made for the invention are: 1. The means described for controlling and directing the flow of gas through condensers, purifiers, and the like, whereby the respective functions of each inlet and outlet are rendered interchangeable. 2. The combination with a valve-box having a false bottom formed by horizontal and vertical partitions, and valves and valve-chambers of the type referred to, of an additional pair of such valves and valve-chambers, each of the additional chambers communicating with the spaces above and below the false bottom, and with the main outlet or inlet respectively.

Electric Apparatus for Igniting and Extinguishing Gas-Lamps.

AUBERT, A. M. & J. M., of Billancourt, France.

No. 796; Jan. 13, 1908.

This invention relates to apparatus in which the passage of an electric current through an electro-magnet determines alternately the ignition and extinction of the gas; the act of extinguishing the flame ensuring a tight closure of the supply.



Aubert's Lamp Lighter and Extinguisher.

Fig. 1 represents two vertical sections through the apparatus—the right-hand half being in a plane at right angles to the left-hand half. Figs. 2 and 3 are diagrammatic sections illustrating the position of the parts during the opening and before the closing of the valve respectively.

The actuating mechanism consists of an electro-magnet surrounding a core B, constituting one pole of the fixed armature, the other pole C of which is annular. An annular iron armature D is movable and closed below, "so that the magnetic flux has a closed path, and a very feeble current will enable the magnet to attract the armature so as to cause it to move vertically." The current is supplied by the lead E.

In fig. 1 there is fixed to the movable armature a cylinder F, having four windows, symmetrically arranged and guided at its lower part by a cylindrical flange, which serves to limit the stroke of the armature. Opposite two of the windows are pivoted upon a fixed piece two latches J. When the valve is raised, the latches engage in the windows and at the same time press with their tails upon the springs L. In front of the other two windows (situated at an angle of 90° from the first two) are arranged outside the cylinder springs M, in which are openings.

The valve O (in this instance, a floating valve) normally rests upon a seat having a very narrow surface and mounted in a socket which

screws into the plate forming the bottom of the casing. The valve is carried by a stem S having a mushroom head adapted to engage the latch J when the valve is raised. Beneath the head is fixed (in a plane at right angles to that of the latch) a transverse bar U, the hooked ends of which engage in the opening of the spring M.

In order to produce the desired ignition, there is (preferably at its upper part) a platinum wire, which can be heated to incandescence by the passage of the current. The gas enters from below, and, rising through the fixed annular armature, leaves the apparatus at V.

Assuming the parts to be in the position of rest shown in fig. 1—that is, with the valve O closed—no fluid can issue at V. The mushroom head is not engaged with the latches J, but the hooks are engaged in the openings in the springs M. If, now, an electric current is passed through the electro-magnet, the armature D is attracted upwards, and carries with it the cylinder F and springs M. As the latter are engaged with the bars U, the valve O is lifted from its seat, and at the same time the head is engaged by the latches J—the engagement being maintained by the pressure of the springs L. The parts are then in the position indicated in fig. 2, which shows two sections in planes at right angles to each other. Gas can now pass through the apparatus, and is ignited by contact with the incandescent platinum wire.

As the armature continues to ascend, the lower edges of the windows in the cylinder F engage the latches J, and the latter are turned; but the hooks being still engaged in the openings of the springs M, the valve remains open. As soon as the current ceases, the armature (being no longer attracted) falls down, carrying with it the cylinder F and the springs M. The latches J, which at the end of the upward stroke were disengaged, are now suddenly again brought into engagement with the head, so that the valve is still held up as the springs, which in their upper position were not in contact with the sides of the casing, descend. The upper edge of their openings slide over the hooks, which, at that time, are fixed in position. Thus the hooks are no longer opposite the openings in the springs. As the descent continues, the springs are brought at their lower ends towards the centre, owing to the inclined surfaces of the casing. The latches J, although they project through the windows, in no way prevent the descent of the cylinder. Thus the valve remains lifted—the parts being in the position shown in fig. 3, and gas passes freely through the apparatus.

If, now, a second current be passed, the armature is attracted and the cylinder F again lifted. During its ascent, the lower edges of the windows engage the latches J, and disengage these from the head. Thereupon the valve falls freely from its seat, because the springs (being no longer supported by the side of the casing) do not offer any check to the descending valve. The passage of gas is now checked, and the gas is extinguished. As soon as the current ceases, the armature falls again, and the apparatus is once more in the position of rest shown in fig. 1.

Double Incandescent Mantles.

AKTIENGESELLSCHAFT FÜR SELAS-BELEUCHTUNG, of Berlin.

No. 2057; Jan. 29, 1908. Date claimed under International Convention, July 27, 1907.

Double incandescent bodies, as hitherto manufactured, the patentees state, generally consist of sleeves or mantles, the fabric of which is not continuous, but which are drawn one over the other and sewn together at one end, with the result that there is an accumulation of fabric at the place exposed to the point of the flame in upright burners, which largely decreases the strength of the mantle and its power of resisting shock. In the case of inverted burners, the meshes of one end of the two bodies are threaded on to one thread, drawn together, and sewn at this place after one of the bodies has been inserted in the other. It is, however, said to be "very difficult to distribute the folds or creases uniformly, and also to regulate the width of the opening at the top of the mantle." In accordance with the present invention, on the other hand, the two mantles of the double incandescent body present a continuous and connected mesh at the place where the point of the flame impinges—in other words, at that end of the mantle against which the point of the flame impinges, the outer mantle merges directly into the inner mantle. By this means, on the one hand, any considerable accretion of fabric is prevented, and, on the other hand, the two mantles lie equally close together everywhere.

APPLICATIONS FOR LETTERS PATENT.

5252.—KNILL, S. I., JUN., "Gas-fire lighter." March 9.
5273.—MANNING, B. A., "Supporting mantles." March 9.
5292.—GREENLAW, W. A., and ROYCE, H. A., "Flexible pipe joints." March 9.
5345.—ROGERS, H. J., "Compressing gases for illuminating and heating purposes." March 10.
5356.—BOWLEY, J. W., "Gas-burners and incandescent lamps." March 10.
5371.—STONE, S., "Pressure-recorders." March 10.
5381.—SUGG AND CO., LTD., and SUGG WRIGHT, E., "Gas-lanterns." March 10.
5405.—CROMBIE, W. A. E., "Producer-gas apparatus." March 10.
5474.—NORRIS, A. W., and CLINCH, W. G., "Gas-spreader." March 11.
5595.—COURTAULD, S., AND CO., LTD., and WILSON, L. P., "Cellulose filaments." March 12.
5623.—ROBERTSON, F. D. S., "Carbide of calcium." March 13.
5626.—DARWIN, H., "Incandescent burners." March 13.
5657.—PALLENBERG, F., "Saturator for the manufacture of sulphate of ammonia." March 13.
5673.—JOHNSON, J. Y., "Discharging gas-retorts." A communication from Badische Anilin and Soda Fabrik." March 13.
5676.—RETALLACK, C., "Gas-stoves." March 13.
5708.—SHOWELL, E. A., and HARRIS, E. H., "Adjustably carrying shades for gas-lamps." March 14.
5730.—HARRISON, C., "Ascension pipes." March 14.
5732.—MILNE, J., "Inverted gas-lamps." March 14.
5747.—BRATT, L. G. J., "Gas-fires." March 14.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

The Dessau Vertical Retorts.

SIR,—The conclusion to be drawn from the article on the above subject by Dr. Harold G. Colman, which appeared in the last number of the "JOURNAL," is that the increase by 1 metre in the length of the Dessau retort is merely a special method of construction devised by Herr Körting for the production of a mixture of coal gas and water gas—an object which I myself had in view in designing the multiple vertical retort setting I have patented. Dr. Colman is of opinion that Herr Körting's method is not suitable when it is necessary to maintain in the gas not only a suitable calorific power, but also a definite illuminating power, as is the case in England and other countries; and everybody will, I think, share his opinion on this subject. But he also says that in the probable impossibility of one being able to carbonize coal at higher temperatures than those which constitute a part of the Dessau system, it would be preferable, and very likely more economical, to employ four-metre Dessau vertical retorts, and to have a separate installation of plant for the manufacture of water gas to be added to the coal gas, unless "arrangements were made whereby steam could be added at a number of points around the periphery of the retort," which would have the effect of considerably diminishing the reduction in the illuminating power of the gas. This, however, Dr. Colman thinks it would be very difficult to accomplish.

On the latter point, I am not of Dr. Colman's opinion; and I should like, with your permission, to point out, first, that my system of vertical retorts has been devised with the view of rendering possible the attainment, in the combustion chambers, of higher temperatures than those at present employed; secondly, that the steam introduced into the retorts is the superheated steam obtained, without cost, as the result of the utilization of the heat of the incandescent coke drawn from the retorts; and, thirdly, that this superheated steam penetrates into the retorts at all the points of its periphery. This will be exemplified in a small setting of four vertical retorts on my system which is about to be put up at the Municipal Gas-Works at St. Gilles. In designing this setting, I have substituted for the vertical retorts, with double partition and movable bottom, shown in the drawings attached to my specification, upright retorts of a much simpler form with only one partition, and without bottom. I have arranged that these retorts shall be only 3·5 metres (11 ft. 6 in.) in height over all; so that I shal be able to see by this trial whether or not it will be necessary to increase their height. I do not think it will.

By this arrangement, it will, I believe, be possible to utilize the stirrer which constitutes the central feature of my inexplosive vaporization apparatus, for producing in the middle of the coal in process of carbonization, as well as over its entire height, a space by which the gas generated may be more easily liberated and enabled to pass away to the hydraulic main, and into which the steam will not penetrate until after it has been almost completely converted into water gas during its passage through the layer of coke near the wall of the retort. In this way, it will be possible to avoid the destructive action of the excess of steam upon the light-giving constituents of the gas, to which Dr. Colman attributes the great diminution in the illuminating power of the gas made in Herr Korting's five-metre retorts.

Brussels, March 21, 1908. A. RUMMENS.

Statutory Restrictions.

SIR,—In the "Notes from Westminster" in the "JOURNAL" for the 17th inst., you state, when commenting upon the limitation to a carry-forward, that it seems a ridiculous thing to put so many leading-strings on commercial enterprises subjected to competition and regulated by the sliding-scale. Reading this, one rather wonders whether the day has not arrived when there should be complete emancipation from all this tying-down of gas companies by statutory obligations, formulated with the intention of benefiting the consumers, which in many cases, if not in all, has had the opposite effect. A good deal has been done of late years in freeing the business from this thraldom. Illuminating power has been reduced and sulphur clauses have been abolished. Then, notwithstanding the advent of incandescent burners, necessitating higher pressures, we are still given a free hand in the matter of pressure which we ought to have with respect to all our practices.

In the cases where gas-works can be built upon land obtainable by agreement, has the day not arrived when rights could be given to any individuals who have manifested their earnestness by embarking their capital, to open the roads for so beneficial a purpose as supplying gas? And if the public requires protection, could it not be consolidated into one model purchase clause? A short enabling Act of this sort, if well supported, might very easily be passed, and would be to the benefit of multitudes who at present are deprived of the benefits of gas lighting because they happen to be scattered over the country without forming nuclei sufficiently important to warrant undertakers risking the expenses attendant upon applying for statutory powers.

March 19, 1908. QUI LUCEM DARET.

Use of the Word "Consumer" in Water Acts.

SIR,—In Mr. George Kebbell's article on the subject of the Metropolitan Water (Charges) Act, 1907, in the "JOURNAL" for the 17th inst., he says: "For instance, the word 'consumer' has been introduced for the first time in any Water Act." As a matter of interest, I may say that at the present moment I have before me a Water-Works Act passed in 1864, in which the word "consumer" is used more than once.

March 19, 1908. WATER-WORKS.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF COMMONS.

The following further progress has been made with Bills:—

Lords Bill read the first time, and referred to the Examiners: Huddersfield Water Bill.

Bills reported, with amendments: Blaydon and Ryton Water (Transfer) Bill, Bury and District Joint Water Board Bill, Glyncorrwg Urban District Council Bill, Lincoln Corporation Bill.

The Derbyshire County Council have withdrawn their petition against the Draycott Gas Bill.

The Manchester Corporation Bill has been referred to a Select Committee, consisting of Colonel Seely (Chairman), Mr. Gibbs, Mr. Myer, and Mr. Macpherson; to meet next Tuesday.

BROMLEY AND CRAYS GAS BILL.

House of Commons Committee.—Monday, March 16.

(*Before Mr.* WHITBREAD, *Chairman, Major* RATCLIFF, *Mr.* WALTER REA, *and Mr.* PEARSON.)

This Bill proposes to provide for the amalgamation of the Crays Gas Company with the Bromley Gas Consumers' Company, and for other purposes.

Mr. BALFOUR BROWNE, K.C., and Mr. C. C. HUTCHINSON appeared for the promoters; Mr. HONORATUS LLOYD, K.C., Mr. W. B. CLODE, and Mr. R. S. CLEASE represented the Bromley Rural District Council, the Chislehurst Urban District Council, and the Foots Cray Urban District Council, petitioners against the Bill.

Mr. BALFOUR BROWNE, in opening the proceedings on behalf of the promoters, said that the chief object of the Bill was the amalgamation of the Bromley and Crays Gas Companies. Both Companies were incorporated in 1865 by separate Acts of Parliament, and at that time there were three parishes which were common to both areas. By section 48 of the Bromley Gas Act of 1865, it was provided that the Company might, from time to time, agree in writing with any Company to supply gas within the limits. Ultimately a question arose as to the respective rights in the common area, with regard to the supply of gas to the Bromley Workhouse. Litigation ensued; and Mr. Justice Bucknill defined the district and indicated certain points beyond which the Company were not to supply. The two Companies afterwards entered into negotiations, which led to an agreement for amalgamation. The amalgamation would be in the interest of consumers and shareholders, and substantial economies would result if the Companies worked together in regard to management and stock. The main question between the promoters and the local authorities who appeared in opposition was whether the proposed bargain would be fair to the consumers. The Bromley Company had the larger and more important area, and had ordinary stock with a standard dividend of 5 per cent., and a sliding scale increment of 2s. 6d. per 1d. reduction in price. Of this amount, they had issued £104,000. They had received premiums of £828, which went into the capital account bearing no dividend, and there was £95,172 remaining to be issued. Their "B" ordinary stock had a standard dividend of 3½ per cent., and the 2s. 6d. per 1d. reduction was the same with regard to this stock. They had issued £165,700 of it. The premiums which they had secured on the stock had amounted to £37,167, which also went into capital bearing no dividend. With regard to their borrowing powers, they had a mortgage at 4 per cent. of £1500, and debenture stock at 3½ per cent., £55,000, and still remaining to be borrowed, £33,500. With regard to the Crays Company, the original stocks were converted in 1897; and new stock was issued with a standard dividend of 5 per cent. As in the case of Bromley, the sliding-scale was 2s. 6d. more dividend for every 1d. of reduction. The amount of stock issued was £82,278; and the premiums received were £6278, and there remained to be issued £17,382. The borrowing powers of the Crays Company were: Debenture stock, rate of interest 4 per cent.; amount borrowed, £15,000; remaining to be borrowed, £5000. As a rule, the price charged for gas had been higher in Crays than in Bromley. With regard to the dividend paid in Bromley from 1903 to date, the "A" stock had received 6 per cent., and the "B" stock 4½ per cent. Prior to 1903, they had capital bearing interest at 10 per cent. and 7 per cent.; but it was all converted into 6 per cent. and 4½ per cent. in 1903. On the other hand, from 1897 to 1907 the Crays Company paid 5 per cent. The illuminating power of the gas in Crays was 15 candles, and in Bromley 14 candles. The illuminating power of gas was now less important than formerly, because of the incandescent mantles almost universally used. As a fact, the saving went to the consumer under the sliding-scale; but if the whole of it were given, it would only amount to 1d. per 1000 cubic feet. It was proposed by the Bill that in future the illuminating power generally should be 14 candles. He had some alterations to make in the Bill, which perhaps might remove the objections of the local authorities. With regard to the price of gas, in clause 10 they proposed the following alteration:—

> For the first five years after the date of amalgamation, not more than 6d. nor less than 4d. in excess of the Bromley price; for the next five years, not more than 4d. nor less than 3d. in excess of the Bromley price; and after the expiration of the said period of ten years, the same price as the Bromley price.

There was a proviso that the price in Crays should not exceed 4s. 6d. so long as the Bromley Company's price was below that figure, and if it were 4s. 6d. or more, then the price in Crays should be similar. It was expected that large economies would result from the amalgamation; but in the first ten years, in order to produce the anticipated economy, they were going to sacrifice the Crays works. This was a very considerable sacrifice to make on capital account; and until the amount involved was written off, they would not be able to make the large economies which would, at the end of ten years, benefit the consumer. The price charged in Crays would then be placed on a dead-level with the price charged in Bromley. There was no unfriendly feeling between the Company and the local authorities—they were there to watch the interests of the consumers of gas. With regard to the petitions against the Bill, all three were very similar, and raised much the same points. The petition of the Chislehurst Urban District Council stated that, while they did not oppose the amalgamation of the two Companies, if such amalgamation were in the interests of the shareholders and consumers, they objected to the terms of amalgamation in the Bill because it would be most injurious to their district and to the consumers of gas. The price charged throughout the whole of the petitioners' district should, it was contended, be the same as the price charged in Bromley; but the promoters found that until the capital (which would be something like £20,000) lost by removing the Crays works were recovered, they could not afford to do so. Both the Bromley Company and the Crays Company were now supplying gas in the petitioners' district. The price charged by the Bromley Company was 3s. 3d. per 1000 cubic feet; while the price charged by the Crays Company was 3s. 6d. Both Companies were authorized to charge a standard price of 4s. 6d. per 1000 feet, and were authorized also to increase their standard rates of dividend in any half year by 1s. 3d. in respect of each 1d. by which the actual price of gas was in such half year below the standard price of 4s. 6d. The petitioners objected to the reduction of the illuminating power of gas from 15 to 14 candles, and also to the provisions in the Bill as to the supply of power gas. A clause it was asked should be inserted in the Bill, limiting the amount which the amalgamated Company might carry forward in any half year after providing the amount required to pay a half-year's dividend at the authorized rate on the paid-up capital of the Company for the time being.

Evidence was then called on behalf of the promoters.

Mr. *Alexander Dickson*, the Chairman of the Bromley Company, said both the Bromley and Crays Companies were incorporated in 1865, when statutory limits of supply were given to each of them embracing various parishes—Orpington, Farnborough, and Chislehurst—being three parishes which were common to both areas. Section 48 of the Bromley Gas Act gave them powers to enter into arrangements with neighbouring Companies having common territory and powers of supply in that common territory. The effect of the clause was that when the respective bounds of the Companies had been fixed by agreement, these bounds would be taken as if they were limited by an Act of Parliament. Up to 1865, both Companies worked in their respective areas without coming into conflict, and both were developing certain parts of their districts which were somewhat remote from the district of the other. The time arrived, however, when the central part of the whole united area came on the verge of development. Ultimately, certain disputes between the two Companies became acute and terminated in 1899 in some form of litigation. The Crays Company alleged that during the progress of their respective Bills through Parliament, an agreement (subject to section 48) was arrived at; but the agreement itself was not to be found. An arrangement was come to with respect to the portions of territory which should be in the district of the respective Companies; but after its execution, the document did not appear to have been seen. The outcome of the litigation was the drawing up of an agreement by Mr. Justice Bucknill. This agreement was in effect, that in the central part of the united areas which had not developed much at that time, three roads existed crossing the area, and neither Company was to supply gas along one or other of the roads beyond a certain fixed point. The effect of this was that there were some parts of the Bromley area wherein Bromley could not supply; there were some parts of the Crays area wherein Crays could not supply; and some parts were common to both Companies. In one particular portion of the territory, again, the people could not get a supply of gas. The object of the present Bill was to amalgamate the two Companies and so enable a supply to be given over the whole area and avoid all friction in the future supply of gas in the district. The Bromley undertaking was now the larger of the two, in the proportion of three to one. Their make of gas during the year was about 300 millions, and that of Crays 100 millions. At the present time, however, the Crays area was developing at a more rapid rate than Bromley. The price now charged for gas in Bromley was higher than during the preceding few years; but this was due to the abnormal rise in the price of coal. Taking the period of two years, one Company with the other, the normal difference in price actually charged between the two Companies was in the neighbourhood of 7d. In earlier years, the disparity in price was as much as 1s. This figure of 7d. they and the Crays Company had considered should be the foundation in adjusting their mutual interests. The difference in the cost of manufacture was practically 8d. They proposed to purchase the interests of the Crays shareholders by the issue of a new "C" stock, which would bear interest at the rate of 5 per cent. The new stock would stand in exactly the same position as the old "A" stock of the Company. The sliding-scale would be regulated by the price charged in Bromley; but the extra dividend that it would take over 5 per cent. would be always ½ per cent. lower than the Bromley "A" stock. The effect of this concession amounted to an equivalent of 4d. under the sliding-scale, because the "C" stock could never overtake this ½ per cent., whatever the price was, and could not come into any advantages under the sliding-scale until the price had been reduced from 4s. 6d. to below 4s. 2d. The "C" stock, when the rate of dividend had fallen to 5 per cent., would, notwithstanding the price of gas, remain there until the Bromley dividend had fallen to 5 per cent., and then they would both move down together. If the same price were fixed with regard to the two undertakings, it would be placing a burden upon the Bromley consumers and shareholders. After ten years, the prices would be the same. The Crays consumers would get the immediate advantage in the dropping of the price from 3s. 1d. downwards to the less price of 2s. 11d. that had been previously charged in Bromley. It was proposed to give the Company liberty to provide power gas, and at the present time there were a number of factories

to which gas of lower illuminating power could be distributed with advantage.

Mr. *Corbet Woodall* said he was a consumer of the Bromley Company's gas, but was bound to remark that he did not consider that the supply of a cheap gas for power purposes would be of the slightest value to the Company. In speaking of advantages which the amalgamation would create, he said that it was desirable not only in the interests of the Companies themselves, but of the consumers of gas. With regard to the agreement of 1865, he said there was no minute on the books of either Company that such an agreement had been entered into. There was an understanding, as he viewed the matter, that might be broken at any time; and with regard to the district not yet occupied, either Company could lay mains in it. The overlapping area ought to be done away with in the present case. The works of the Bromley Company were well placed for the supply of the whole area with gas; and they were of abundant size for supplying the amalgamated district. The retorts were sufficient for an output of about 2½ million cubic feet daily; while the demand at Bromley during the past winter was only 1⅓ millions, and at Crays 460,000 cubic feet. The purifiers were also sufficient for the combined quantity, and the gasholders at Crays would be continued. At Crays, the works were in a fairly good condition, and the plant was equal to the demand. The gas at Crays cost between 7d. and 8d. per 1000 cubic feet more than at Bromley. Both Companies were working under the sliding-scale arrangement; and each had a standard price of 4s. 6d. per 1000 cubic feet. At the end of the present month, Bromley would be charging 3s. 1d., and the Crays Company 3s. 7d. The price at Bromley would, he believed, shortly return to 2s. 11d.—thereby involving a reduction in the price to the Crays consumers of 2d. Granted the difference of 6d. fairly represented the difference in cost between the two Companies, then in future all advantages that might accrue from the reduced cost of manufacture would go equally to both areas. The greater part of the plant at Crays would be thrown out of use—to the value of about £20,000. It was clear that it would be ruinous to allow capital invested in works that were not productive to continue to bear dividend for an indefinite time; and, consequently, the first thing the amalgamated Company should do was to provide the works at Bromley in replacement of the works abandoned at Crays. Assuming the saving of cost of manufacture upon the Crays gas to be 7d. per 1000 cubic feet, that would be about £2800; and 1d. per 1000 cubic feet in the Crays area was about £400. The petitioners entertained a fear that, as the Bill was drafted, any additional profits earned might be applied to increasing dividends, without reducing the price to consumers; but with the consent of the promoters, he would propose that, so long as the price of gas to the consumers in the Crays district was more than 3d. in excess of that charged in the Bromley district, no higher dividends should be paid than at present. By this means they might still charge the 6d. differential rate; but until they reduced the difference to 3d., they could not give themselves any bigger dividends.

The CHAIRMAN: Do you mean that you would come half-way down the difference between the Crays and Bromley prices before you began to get any advantage from your sliding-scale arrangement?

Witness replied that he would. He went on to say that 14 candles was now a standard in all the Gas Acts except where it had been reduced to 13; and having regard to costs, that was the most suitable quality of gas to supply. The quantity of gas used for purposes that did not call for illuminating effect was probably 80 per cent. of the whole; and the consumers would get a benefit, because the gas would be sold to them at a lower price. In the 80 per cent., he included the gas which was used with incandescent mantles. They might get from a gas with no illuminating value at all—such as the natural gas obtained from wells in America, or what was called "blue water gas"—an excellent effect with mantles, although there was no luminosity.

Cross-examined by Mr. HONORATUS LLOYD: With regard to repairs and maintenance, a fair figure to take per 1000 cubic feet, the average in Bromley, was something like 5d. less than in Crays. He would prefer the Crays expenditure to the Bromley expenditure. Some reduction in the cost of repairs and maintenance was possible, but it was open to question whether such a course would be wise.

Mr. Woodall's re-examination was postponed.

Mr. *R. W. James*, Assoc.M.Inst.C.E., Deputy-Mayor of Bromley, next gave evidence. He said that but for the fact of clause 10 of the Bill, the Bromley Corporation would have offered strong opposition; and they would also have resisted any attempt to effect amalgamation on the footing of a flat-rate. Cross-examined, he said that if the petitioners could show the Committee that a flat-rate was the proper thing if there was to be amalgamation, they would rather stay as they now were.

Tuesday, March 17.

When the proceedings were resumed to-day,

Mr. *Corbet Woodall* was recalled and re-examined by Mr. C. C. HUTCHINSON. He said the sliding-scale was calculated to operate both to produce a low price and to reward the shareholders with increased dividend. If the price were raised to 4s. 6d. per 1000 cubic feet, the sliding-scale would go, from the point of view of the consumer. But if the price was high enough, the shareholder would be able to take a big dividend. If the Company were to raise their price to the maximum, it would be their ruin. These were not days of monopoly in the matter of the supply of light and power. It would be understood that if the price went up to 4s. 6d., there would be no increased dividend for the shareholders—4s. 6d. would exhaust the sliding-scale. The self-denial of the Company in not dividing the full dividends to which they were entitled had gone to improve their position. He did not see any reason why the superior position in all respects of the Bromley undertaking, whether as to locality or size or what not, should be taken to endow the Crays shareholders and the Crays consumers without any corresponding payment by them. The rapidity in the growth of the Crays undertaking had something to do with the large amount that they had had to pay in repairs and up-keep. They were constantly laying mains through sparsely populated districts. Very often these mains were laid of a size unsuitable to the requirements of the moment, and had to be taken up again shortly afterwards because they were not sufficient for the growing demand. There was not much to take exception to in the contention of Crays that the percentage of increase was greater than in the case of Bromley, and was likely to continue greater. The volume of increase in Bromley was higher, and would continue so for many years to come, than in the Crays district, however great it might be. In one year, although Bromley had only increased at the rate of 3·66 per cent. against 7½ per cent. in the case of Crays, yet this 3·66 per cent. was a greater volume than the 7½ per cent. in Crays. It was probably about twice as much. A hint had been thrown out that with amalgamation the consequent reduction of illuminating power would mean 1d. diminution of the cost of manufacture over the whole undertaking. With regard to this, however, 1d. was allowed in the case of the South Metropolitan Company some years ago; and the Company had never ceased to regret that they agreed to so large a reduction—the value was not anything like equal to it. The saving to a gas company reducing from 16 candles to 14 candles was not more than ⅝d. per candle. In this instance, the reduction was in the case of the Crays district only. The value of one candle, in order to bring about uniformity, was certainly not more than ⅝d.; and as Crays was a quarter of the whole, they had to divide the ⅝d. by four in order to get the value over the whole undertaking—it was absolutely negligible—of the saving, whatever it might be. Four-fifths went to the consumer.

Mr. *A. F. Phillips* said he was adviser to the Crays Gas Company. From his knowledge of the two Companies, the proposals contained in the Bill were equitable both to shareholders and consumers. The demand of the petitioners was not reasonable or just to Bromley that, after the amalgamation, gas should be supplied at the same price in both districts. The differential price proposed did not give more to Bromley than they were entitled to. There was no appreciable difference between 15 and 14 candle power gas.

In reply to Major RATCLIFF, witness said that probably nine-tenths of the consumers used incandescent burners. The provisions for compensation were very reasonable, and were suggested by himself. At Bromley there was available space for providing for increases in the future. They had a carbonizing capacity of about 2¼ millions, and a maximum output of gas of 1,378,000 cubic feet. There would be no difficulty in constructing another retort-house for producing a further million cubic feet a day. The length of mains was 85 miles. In Crays, there was a carbonizing capacity of 720,000 cubic feet; their maximum output being under half-a-million. The gasholder capacity was 806,000 cubic feet; and they had 40 miles of mains. In Crays, the increased quantity of gas sold in 1907 was 2,649,000 feet; and in Bromley, 6,964,000. In the two Companies, the cost of gas varied from 8d. to 11d. per 1000 cubic feet. Crays had a much greater mileage of mains in proportion to their output than Bromley; and they had a considerable length of dead mains. The Bromley Company sold 34,280,000 cubic feet of gas per mile of main, and the Crays Company 2,426,000 cubic feet. For the year 1907, the total sale of gas in the Bromley district was 291,405,000 cubic feet, and in Crays, 97,055,000 cubic feet.

Mr. *W. Woodward*, the Engineer to the Bromley Company, then gave evidence. He said that the total area of the Bromley district, as enacted, was 20,569 acres, and in Crays 16,835 acres, the overlapping areas amounting to 7700 acres. In the Chislehurst district, the Crays Company were supplying about 6000 acres; and in Orpington and Farnborough, 3517 and 1412 acres respectively. The amalgamation of the two Companies was desirable in the interests of the public. It would be accompanied by certain economies; and the advantages to the Crays consumers would be very considerable. The amounts charged to repairs in Bromley were very small; this being due, in a measure, to their enterprise in the past years in preparing plant to meet greater increases than had been realized. It was now much in excess of the requirements, and consequently repairs had been very much smaller than they might have been if the plant had been overloaded with work. The charge with regard to repairs of stoves and meters was averaged over a period of ten years. On Dec. 31, 1907, the total expenditure on fittings on hire was about £16,000; and some three-fifths of this was written off altogether—reducing the amount to £9130. The cost of heating stoves (£1231) had been written-down to £971. Public lamps, £3550, had been written off £3380; and this equalled for fittings on hire for the year 1907 at 1·27d. per 1000 cubic feet, on heating stoves 0·07d., and on public lamps 0·56d. With regard to the claim of the petitioners that the price of gas in Bromley and Crays should be equal on amalgamation, he said it was impossible to imagine such a thing. The Bromley works were in such a condition now that no capital outlay would be necessary for some years. But, necessarily, amalgamation with Crays would bring the period much nearer when capital outlay would be required; and therefore the Bromley consumers and shareholders had a right to expect the Crays consumers to contribute towards the extra cost incurred by the new capital.

In cross-examination by Mr. CLODE, witness said he did not think it was right to say that the average price taken over the whole of the gas undertakings for repairs and maintenance, and so on, was about 6½d.—in fact, he did not think they would find any so low as that.

Re-examined by Mr. HUTCHINSON, witness stated that if the Crays Company were to go on as at present, he should not think it would be possible for them to supply gas at the prices contemplated as a result of the amalgamation.

This concluded the case for the promoters.

Mr. CLODE proceeded to call evidence on behalf of the petitioners.

Mr. *William Cash* said that the Bromley Company had raised £193,350, and there had been added on conversion £132,850; giving a total of £326,000. There had been premiums paid in respect of certain of the capital amounting to £39,473. He did not see under the proposed amalgamation at the present time that there was sufficient advantage given to the consumer out of the undoubted savings that would be effected by the Companies. With a possible increase of 8d. over the Bromley price, the consumers might quite possibly have an increase in the price of gas.

Mr. *E. H. Stevenson* stated that Crays would be better without an amalgamation upon the terms suggested. On the other hand, there were many economies which might be effected by an amalgamation. The

Crays consumers would have to make up the rating out of their own pockets, and pay the differential rate as well. With regard to Crays, there was no possibility of spending, year in and year out, approximately more than 6½d. in repairs, maintenance, and renewals. The difference in cost was between 7d. and 8d.; and he agreed that, in the event of amalgamation and gas being manufactured on the Bromley site, the whole of this 7d. or 8d. would be saved. This worked out, on the figures of 1907, at nearly £2900. In the event of an amalgamation, a testing-station should, of course, be provided at the Local Authority's office.

In cross-examination by Mr. HUTCHINSON, witness said he was strongly opposed to the alteration of the standard price, unless there were unusual circumstances.

Mr. HONORATUS LLOYD, in addressing the Committee on behalf of the petitioners, said that they objected to amalgamation on the terms proposed in the Bill; but they did not object to amalgamation upon equitable terms. It was immaterial to them whether the Committee would pass amalgamation upon such terms as they thought equitable, or whether they refused amalgamation *in toto*. They were happy either way; but they objected to the Bill as it stood at present. It was only in exceptional cases that Parliament interfered with the standard price. There was no desire evinced for an amalgamation, except by the Companies themselves; they had no request from the consumers to take such a step.

Wednesday, March 18.

When the Committee resumed their sitting to-day,

Mr. BALFOUR BROWNE replied on behalf of the promoters, and handed in the following clause:—

Notwithstanding anything in this Act contained, so long as the price in the Crays district is more than 3d. in excess of the Bromley price, the Company shall not be entitled to pay a higher rate of dividend in respect of the ordinary stocks of the Company than the following rates respectively—namely, "A" ordinary stock 6 per centum per annum, "B" ordinary stock £4 10s. per centum per annum, "C" ordinary stock £5 10s. per centum per annum.

The room was cleared while the Committee deliberated in private. On the readmission of the parties,

The CHAIRMAN said: The principal point we have had to consider is the question of the differential rate; and looking to the fact that the whole of these two districts will for the future exist as one district served by one Company, with the advantages or disadvantages that may arise respectively from it, we think that, if the proposal made on behalf of the Company by Mr. Woodall is incorporated in the Bill, it will effect justice as between the two districts. I do not know whether it is agreed that the clause which has just been handed to the Committee does carry this out.

Mr. CLODE: We have not seen the clause.

The CHAIRMAN: That will be discussed between Counsel afterwards. We propose to leave the standard price at the figure of 4s. 6d., and the testing-station at its present position in the works of the Crays Company. This, in our opinion, is the fairest place at which to test the gas. Then we have to consider the reports from the Local Government Board and the Home Office.

Mr. FRERE (Parliamentary Agent for the Bill): In regard to the Home Office report, I think we have complied with all the requirements except as to clause 35. Perhaps you would like to hear evidence on that? They suggest we should have the clause in the Truro Gas Act. This would absolutely prevent anyone who takes power gas from us from using it, even with our consent, for lighting purposes. Our clause allows power gas to be used.

Mr. *Alexander Dickson* was recalled to explain why the clause was inserted under which gas supplied for power purposes might be used for illuminating purposes by consent of the Company. Witness said it might be the case that, where gas was supplied to a large factory for power purposes, it would be possible, with the aid of incandescent mantles, to use it for illumination. There was no substantial objection to a manufacturer, with the consent of the Company, having the opportunity to use such a supply for illumination purposes, instead of taking gas of the higher candle power.

The CHAIRMAN: The Home Office make a very strong recommendation. They say: "In all recent cases in which powers have been given for the supply of such gas, a clause has been inserted prohibiting its supply for the purpose of illumination."

Witness: If you do not think what I have submitted to you has enough strength to persuade the Home Office to alter the condition, we are perfectly willing to take it subject to the Home Office directions.

The CHAIRMAN: I am pretty well confident it will not persuade the Home Office. I am afraid we must agree with them on this point.

Witness: Then we will take it in that way.

The Committee further considered the clauses yesterday.

The Position of the Consolidated Gas Company of New York.—Some weeks ago, news reached this country that the Attorney-General of the State of New York intended to appeal to the Supreme Court for leave to bring an action to annul the Charter of the Consolidated Gas Company, on the ground that the Company was a monopoly, and that it was maintained against the State laws concerning trusts. The appeal resulted in a decision to send the matter to the Appellate Division of the Court for determination. After full consideration of the arguments submitted, the Court, with one dissentient, expressed the opinion that no good public purpose would be served by the institution of such an action as the Attorney-General asked permission to bring. In the course of their judgment, the Court stated that what was prohibited by the anti-trust laws of the State was "the creation of a monopoly, and establishing such a condition as will result in limiting the supply and enhancing the cost of the commodity dealt in." They thought that "in no sense can the consolidation of the lighting companies in the City of New York into a single corporation be said to create such a monopoly, for it thereby gains no exclusive right. The field is still open to any other company that can obtain the necessary consents from the constituted authorities; and neither the production nor the price can be arbitrarily fixed by the Consolidated Company."

FINCHLEY URBAN DISTRICT COUNCIL BILL.

The Northumberland Clause for the Electric Undertaking Refused.

Police and Sanitary Committee of the House of Commons.

Tuesday, March 17.

(*Before Mr.* CORRIE GRANT, *Chairman*, *Captain* GUY BARING, *Sir* GEORGE FARDELL, *Mr.* ERNEST GARDNER, *Mr.* JOWETT, *Mr.* VINCENT KENNEDY, *Mr.* LAYLAND-BARRATT, *Mr.* MANFIELD, *and Mr.* C. N. NICHOLSON.)

This is a Bill promoted by the Finchley Urban District Council, which, *inter alia*, proposes to confer further powers on the Council in relation to their electricity undertaking.

Mr. RAM, K.C., and Mr. VESEY KNOX, K.C., appeared for the promoters. The petitioners in opposition included the Barnet District Gas and Water Company, represented by Mr. BALFOUR BROWNE, K.C., and Mr. A. M. PADDON, and the Southgate and District Gas Company, on whose behalf Sir R. LITTLER, K.C., was present.

Mr. RAM, in opening, said the area of the Urban District Council of Finchley was peculiar in shape and in its circumstances. It was long and narrow, with a total area of 3314 acres. The growth of the district had been abnormal. The population, which in 1881 was under 11,000, was now 36,500; the assessable value, which in the year ending March, 1896, was only £90,000, being now nearly £219,000. Concurrently with this growth the district rate steadily decreased from 5s. in the pound in 1895-6 to 3s. 9d. in the current year. The product of a penny rate was £835; and generally the financial position was most satisfactory. Water was supplied in the Council's area by the Barnet District Gas and Water Company, and gas by the Gaslight and Coke Company, the North Middlesex Gas Company, the Southgate and District Gas Company, and the Barnet District Gas and Water Company. Proceeding to explain the opposition of the two Gas Companies, Counsel stated that the electric cables of the Council ran from Whetstone along the Great North Road to Barnet. This road was wholly in the Council's area; but the property on one side was in Friern Barnet. The Council had received requests from residents on the side of the road which was in Friern Barnet to supply electricity; and being anxious to give a supply, they sought power by the present Bill to go outside their area in order to do so. If the Finchley Council were unable to afford a supply, it appeared unlikely that a supply would ever be obtainable, because the Friern Barnet Council had allowed an Electric Lighting Order which they obtained in 1901 to be revoked. A similar position existed at Woodhouse Lane. The Friern Barnet Council here, as in the first case, were willing that the supply should be given. The Gas Companies having the right to supply in the area in question objected to the proposal; asserting that it was the thin end of the wedge. The Council, however, strictly limited the distance they might penetrate into the area of Friern Barnet; and that they had no intention to go further was shown by the fact that, though other residents in adjoining roads in Friern Barnet had asked them for a supply, and although the Friern Barnet Council expressed their willingness that such a supply should be given, the Finchley Council had refused to proceed.

Mr. *Edward Calvert*, the Electrical Engineer to the Finchley Urban District Council, examined by Mr. VESEY KNOX, stated that the Council's electric-light station was ample to supply either of the proposed new areas without further capital expenditure. The total outlay on the electricity undertaking to date was £89,017. Application had been made to the Local Government Board for permission to raise a further loan of £22,000 for the purposes of the undertaking. At the local inquiry in connection with this loan, there was no opposition. The electric station was opened in October, 1903; the number of consumers then being 35. This number increased to 143 in 1904, 360 in 1905, 678 in 1906, 1051 in 1907, and 1457 on March 14 of the present year. The lamps in use had increased in even greater proportion.

Mr. VESEY KNOX: It has been suggested that an attempt has been made to show unfair results from the enterprise on account of the large public lighting load. Apparently that is the part of your load which has not been increasing?

Witness replied that the increase had been in the private supply. Continuing, he said the works cost, including management, had been decreasing. Witness put in a table which showed that in the half year ended March 31, 1904, there was a net loss on the undertaking of £300, which was met out of the general district rate. In 1905, there was a profit of £227, which was carried to the reserve fund and invested in London County Council stock. In 1906, there was a profit of £106 which was left in the revenue account. In 1907, there was a loss of £719 18s., to meet which £227 5s. was taken from the reserve fund, £6 18s. 8d. dividends on stock were used, and £378 18s. 6d. provided out of the general district rate. The amount of interest and sinking fund increased from £2747 in 1906 to £4870 in 1907; but included in the latter sum was an item of £549 for interest accrued but not payable before the end of the year. No corresponding credit was taken into account in that year; and the result was that the interest and sinking fund payments were apparently greater than they should have been. There were special circumstances which made 1907 less favourable than the previous year. There were two serious fires at the works, which practically destroyed two accumulators; thus largely increasing the cost of working. The price of coal rose, too. In addition, the period for the repayment of loans allowed by the Local Government Board was reduced from 25 years to a maximum of 16 years. The price charged for public lighting was about 2¼d. per unit. For private lighting the price was 4¾d. per unit on the flat-rate, or 6d. and 3d. on the maximum demand principle; 3¾d. for places of worship; and 2d. for power and heating. The charge for public lamps was about £3 each per annum, or exactly the same as was paid for the gas-lamps in the district. In a report made at the request of the Council in July last, Mr. Preece stated that the present financial result, owing largely to the heavy charges for interest and sinking fund and the low price for public lighting, was not yet entirely satisfactory. He did not recommend

an increase in the price to consumers unless coal rose considerably, as it would undoubtedly check the demand. The street lighting, Mr. Preece said, was not profitable; but with the use of metallic filament lamps considerable reduction in expense might be effected and the quality of the light improved. Mr. Preece summed up the position by saying that, provided due regard was paid to capital expenditure, as well as to working expenses, the Council might feel perfectly satisfied they had embarked on a sound and profitable business. There would be mains in any case along the Great North Road and Woodhouse Lane, witness continued, and demands for supply had been received from premises on the Great North Road which were in Friern Barnet. The Council had also had applications from residents in portions of Friern Barnet adjoining the proposed new area; but the Council felt they would not be justified in expending capital outside their own area on mains. As to the proposed extensions, no capital expenditure except for house connections would be required.

In cross-examination by Sir R. LITTLER, witness said the Council had a very considerable depreciation account in the form of a sinking fund. There was not a separate depreciation fund. The electrical plant depreciated; but the depreciation was made good year by year out of working expenses. The Council charged themselves for electric lighting very much less than they charged the public, because the consumption was for longer hours. The cost at the works was about 1·80d. This included the cost of management and distribution and about 0·34d. for repairs and maintenance. Counsel having suggested that the Council were supplying themselves at less than cost price, witness replied that the cost was 1·804d. The lowest price at which they had supplied a private consumer was 1½d.

Mr. GARDNER: In the case you state, have you reckoned the cost of the sinking fund interest?

Witness: The 1·804d. does not refer to anything but the works cost, exclusive of all capital charges.

That would practically double it?—It would make a considerable difference.

In cross-examination by Mr. PADDON, witness said he would not be surprised to learn that there were 44 houses in the area in the district of the Barnet Company into which the Council proposed to extend. It would, however, surprise him to hear that the Company drew £257 per annum from that area. It was not unreasonable to expect that the first loss made by the Council should synchronize with the big development of business that took place in 1907. An enormous amount of capital had to be laid out to cope with the growth of the business, and although the capital had to be provided immediately, with consequent increase in interest and repayment charges, the benefit was not obtained until the business had grown more in comparison with the capital expenditure. If there was a deficiency on the trading, it would fall on the local rate. Questioned with regard to an item in the 1907 accounts for the sale of burnt ballast and bye-products, which was credited to revenue, witness said the burnt ballast consisted of clay which was deposited on the site of the works by previous contractors, and which was converted into burnt ballast by his department. Asked whether the proceeds should not have been put to the credit of capital account, he pointed out that the coal and labour required came out of revenue. An item of £402 for repairs and maintenance related to machinery of the capital value of about £25,000. This was not an extraordinarily low figure for the maintenance of running machinery. The machinery was brand new. The charge for public lamps per annum was £3 each. He had seen an offer from a local gas company to light 200 of these lamps at £2 10s. The question was before the Council when they were dealing with the lighting of the whole district, and not merely with the area of a single gas company. He believed that, on the figures placed before the Council, they came to the conclusion that it was to the advantage of the district to accept the rate of £3 per lamp irrespective of any gas company's area. Asked if it was to the advantage of the district to pay £3 for what they could have got for £2 10s., witness said it was actually cheaper, taking the whole district together.

Mr. PADDON: Your lowest charge is for power, and that is 1½d. per unit. Mr. Preece says that the average works cost is 1·5d. per unit; and this does not include any provision for depreciation. It is obvious the power people must be getting their current for less than cost?

Witness: The large question of the economy of the central stations comes in there. It is rather too lengthy to discuss now. It appears so on paper; but it is not a fact.

Mr. *Edward Lister*, Clerk to the Finchley Urban District Council, was then called. He explained that the £227 5s. of London County Council stock had not been sold because the price was so low. They were expecting better results in future; and then that sum would form the nucleus of a reserve fund. The boundary line of the Council's area ran through the property on one side of the Great North Road, at the place where the Council proposed to extend. Of such property, a portion, of the rateable value of £75, was already in the Finchley area, and a part, of the rateable value of £1724, was in the Friern Barnet district. The Finchley Council looked to the development that would take place rather than to the development that had taken place there. The rateable value of the property proposed to be included at Woodhouse Lane was £312. The Barnet Gas and Water Company, as a gas undertaking, paid rates on £140; their rateable value as a water concern being £2000. The rateable value of the Southgate Gas Company was £260. The electric undertaking was rated at £400.

Mr. *Stanley Wildash*, Manager of the Finchley branch of the London and South-Western Bank, said that his Company were building a branch in the proposed extended area on the Great North Road, and would use electricity there if they could obtain a supply.

Mr. *W. Griffiths*, of the Manor Farm Dairy, Whetstone, which is situated just over the Finchley boundary at Friern Barnet, stated that he had applied to the Finchley Council for a supply of electricity for both power and lighting purposes.

This concluded the case for the promoters.

Mr. RAM pointed out that, by the Electric Lighting Act of 1882, a local authority might be authorized to supply within any area, although it might not be included in their own district. Between 1891 and 1907, 25 Orders had been made permitting an authority to supply outside its own area.

Sir R. LITTLER, for the Southgate Gas Company, said his case was short but simple. Mr. Ram had argued that the extension was only a very small one; but if the concession sought were granted, there was no reason why the Council should not come in another session for a further extension, and go on in that way. If the Council were going to spend the ratepayers' money even on wiring outside their area, the question became one which ought to be discussed, not only with regard to the amount of mischief which would actually be done by the present proposal, but with regard to the injury which would be done by acceptance of the principle. He thought he was entitled to ask the Committee to put such restrictions on the Council as were not only appropriate in themselves, but such as Parliament might reasonably be expected to impose for the protection of the locality itself, and of those who invested in other undertakings. The Council should not have any further power unless they afforded his clients full protection. Hitherto the Council had made no allowance for depreciation; and they had written nothing off the original value of the plant. All they had done was to keep the plant in a certain state of maintenance. This was absolutely contrary to all commercial principles with regard to electric lighting. Nor was there any insurance or contingency fund. In the year 1907, the Council—if they allowed for £227 brought in from the previous year and for a fortuitous sum of £650 obtained from the sale of burnt ballast—were £1317 to the bad. The principle accepted by both Houses of Parliament was that the charges for electricity supplied by a local authority should be fixed so as to meet the probable expenses of the undertaking. The Company paid rates to the Finchley Council (a considerable portion of their undertaking was in Finchley), and competed with the Council as regarded the supply of illuminant. The Council were now coming into a district of the Company in which the Company had not hitherto had competition. In these circumstances, the Company held that they were entitled to the protection of the Northumberland Clause. Let the Committee see where the competition came in. It was clearly the duty of the Council to obtain the public lighting at the cheapest possible rate. Yet they could only get the custom of the public lighting by charging less than cost price. If the Council charged themselves as much as they charged other people, it would be far more than the Company could supply the lighting for. Thus the Council were carrying on competition in an unfair manner, which made it reasonable for the Company to have protection.

Mr. PADDON, on behalf of the Barnet Company, submitted that there was nothing in the Northumberland Clause which an ordinary trader would not willingly accept. Out of a population of 36,500, the electric undertaking had secured 1457 consumers. Obviously a very large number did not take electricity; and if any loss fell on the rates, it meant that those who did not take electricity would have to pay for it, although they did not use it, because they would have to subscribe to the loss. This was a great injustice. It was rather a strange thing that the principle of the Northumberland Clause was embodied in the Bill as originally presented to the ratepayers.

The CHAIRMAN: Will you tell me how the Council managing their affairs would cut them so close that they could estimate for a loss or a profit of £378?

Mr. PADDON: I am afraid that is rather beyond my powers. But by the Northumberland Clause they are only asked to do their best; and they could bring experts to their aid.

The CHAIRMAN: They have done that.

Mr. PADDON: They should deal with the matter as any other commercial undertaking would deal with it. If they would do this, we should be amply satisfied. He was only asking the Committee not to put his clients in a worse position than those who had come to Parliament in similar conditions. The loss made by the Council in the past year showed clearly that there was sound basis for the request. Moreover, the clause would not operate against the Council's own interest; for if they continued to inflict a loss on the ratepayers, it could not benefit the undertaking. Any private trader who conducted his business as the Council did would find himself in the Bankruptcy Court. The Barnet Gas and Water Company were the second largest ratepayers in the Council's area; and if the Council competed with them, they should do so on a commercial basis.

Mr. RAM, in reply, said that, having failed to show any misconduct on the part of the Council, and having charged the Council with every kind of thing they could think of, the petitioners wanted to kill the Council. This they would do if they put the Northumberland Clause on them. If this clause were put on the Council, they would give up the Bill altogether; for the whole undertaking would be saddled with it. The clause was put in most fairly and rightly in certain cases. If the Council were proposing, in opposition to the Company, to serve the whole of Friern Barnet—a large scheme which would involve a chance of hurting their ratepayers, because it might not be successful—it would be most wise and right to put the clause on them. But the Committee had never had a case before them which at all resembled the present in which the clause had been granted. The whole question of the clause was that there might be a loss. In this case, there could not be a loss. The Council might get a few more customers; and if they did, they would do so without any further expenditure. He therefore asked the Committee not to allow the clause, which, in this instance, was inappropriate, and would not be of the slightest advantage to anyone.

The CHAIRMAN: The Committee are unanimously of opinion that what is asked for in this part of the Bill ought to be given; and they desire me to say they are also unanimously of opinion that there is no case made out in the management of the Council to justify any request for the Northumberland Clause.

Exmouth Water Supply.—It was decided by the Exmouth District Council last Wednesday that the Water Committee should proceed to carry out the boring recommended by Professor Boyd Dawkins with a view to discovering a supply of water for the town. Correspondence has passed between the Council's Solicitors and the owner of the land (Lord Clinton), the result of which is that permission is given to sink a well on condition that the tenant of the land is fairly compensated. It is understood that if the intended operations lead to the discovery of water, application will be made for parliamentary power next session to carry out a scheme.

LEGAL INTELLIGENCE.

LIABILITY FOR DAMAGE TO ROADS.

In the Court of Appeal last Tuesday, before the Lord Chief Justice and Lords Justices Farwell and Kennedy, the action of the *Croydon Rural District Council v. Sutton District Water-Works Company*, to which Messrs. Ewart and Co. were third parties, was under consideration. It was an appeal by Messrs. Ewart from the decision of Justices Phillimore and Walton, sitting as a Divisional Court, holding that the Contractors were liable, under their contract with the defendants, to refund to them the amount they had been called upon to pay to the plaintiffs for damage to one of the roads in their district, owing to extraordinary traffic brought upon it in connection with the construction of a reservoir at Chipstead. The proceedings in the Lower Court were reported in the "JOURNAL" for Oct. 22 last, p. 267.

Mr. BANKES, K.C., and Mr. HENLÉ appeared for the appellants; while Mr. DANCKWERTS, K.C., and Mr. MACKENZIE represented the respondents.

Mr. BANKES said the question, to his mind, turned wholly on the construction of clause 6 in the specification attached to the contract, which was as follows: "The essence of the contract is that the Contractors shall be absolutely and solely responsible for injury or damage to person and property, of any description whatsoever, which may be caused by, or result from, the execution of the works, whether these may have been carried out skilfully, carefully, and strictly in accordance with the provisions of the specification, or not." He submitted first, that this was not damage to property within the meaning of the clause; and, secondly, that, assuming there was damage, it was not caused by, and did not result from, the execution of the works—in other words, that the word "works" only referred to the actual works themselves, not to the carrying of materials. Counsel read the judgment of the County Court Judge, which was in his favour, and those of the Judges in the Court below, which were against him; and he contended that the latter had put a wrong construction on the clause in question.

Mr. MACKENZIE supported the decision of the Divisional Court, in a short argument, in the course of which he suggested that if the materials had been carried by ordinary carts instead of by traction-engines, no damage might have been incurred.

Mr. BANKES having replied,

The LORD CHIEF JUSTICE, in giving judgment, said the case was one of great difficulty, and he was not sure that if he had been sitting alone, he should not have come to the conclusion that the argument of Mr. Bankes was right; but as his brethren took a strong view about it, he concurred in the judgment. Having stated the facts, and read clause 6 of the specification, he said the first point taken by Mr. Bankes (on which he was against him) was that as the interest of the Rural District Council in this road could not properly be described as "property," the claim against the Contractors failed. He did not think this was a ground on which the appeal could possibly have been allowed. The road in question was somebody's property, and the responsibility of keeping it in order rested on the Rural District Council; and if any extraordinary expenses were incurred in repairing the highway, by reason of excessive weight being brought upon it, they had power to recover the extra cost from the persons causing it. In his opinion, it would be much too narrow a construction to put on the clause to say that the Contractor was liable if the road he damaged was vested in a particular person, but that he was not liable if it was vested in somebody else. Therefore he should decide against the appellants on this point, if it were open to them, though he had some doubt if it was, as it did not seem to have been taken in the County Court. On the other point, whether the extra expenses incurred in hauling materials to the site of the reservoir came within the words "damage to property caused by, or resulting from, the execution of the works," he had much more doubt, but did not feel sufficient certainty that he was right to differ from his brethren. The appeal would therefore be dismissed.

Lord Justice FARWELL said, in his view, clause 6 had to be read by the light of clause 3, which was a sort of definition clause; and the contract was, in fact, threefold—to make the reservoir, to supply the labour and materials skilfully, and to take the materials to the place, the distance from the railway station being distinctly mentioned. He thought, therefore, that the Contractor was liable for any damage arising, not only in the construction of the reservoir itself, but also from the cartage of the materials; and therefore the decision of the Court below was right.

Lord Justice KENNEDY concurred.

The appeal was accordingly dismissed, with costs.

THE SERIOUS CHARGE AT MAIDSTONE.

It was briefly stated in last week's "JOURNAL" (p. 706) that Herbert Kell Kindler (aged 38), late Assistant-Manager at the Maidstone Gas-Works—whose arrest on a charge of obtaining a cheque for £300 from Mr. William Day, jun., by means of false pretences was reported in the preceding issue—had been committed for trial. A full account of the Police Court proceedings on the 14th inst. (which occupied a whole day) was, however, unavoidably held over until this week.

The MAYOR (Mr. B. P. Boorman) presided over a full Bench of Magistrates; and Mr. S. L. MONCKTON and Mr. J. BRENNAN appeared, respectively, for the prosecution and the defence. Mr. R. HOAR was present on behalf of the Gas Company.

Mr. MONCKTON, in stating the case, said he would endeavour to prove that the cheque prisoner handed to Mr. Day was not good security for the £300; that he had no possible chance of meeting it; and that he obtained the money well-knowing he could not meet the cheque. The prisoner was for many years Assistant-Manager of the Maidstone Gas Company; and he had for some time been dealing publicly with the stock of that Company. As Assistant-Manager, he had every opportunity of knowing about, and dealing in, this particular stock; but the amount with which he dealt was quite inconsistent with the position he occupied. Though he started some time ago to deal with the stock in a perfectly straightforward way, merely buying and selling, and turning over a small profit, it was clear that for months past he had been dealing with it more in the way of an outside stockbroker, and that he had been getting deeper and deeper in his dealings. It was evident that by the beginning of February his position was one of a very serious nature. He was then in great straits, owing to the various transactions he had entered into, and found it difficult to keep himself, both financially and otherwise, from coming to grief. He (Mr. Monckton) was not going to attempt—in fact, it was quite impossible for him to even guess at it—to describe the method which the prisoner adopted in the various transactions he carried through. But he could say that about the time in question he had given a large number of cheques, and that if they had been presented they could not possibly have been met. They were not met when they were presented later on; and prisoner had no reason to suppose that they would be met at the banks at which he had accounts. Prisoner had accounts with the North-Eastern Bank at Stockton-on-Tees, at Lloyds Bank in Maidstone, and at the London and Provincial Bank in Maidstone. It was necessary that he should trace prisoner's position for some little time back, in order to show that, though he probably started in his dealings in a perfectly straightforward way, he gradually got into such difficulties as led to the financial crash which came on just before Feb. 17. There was no doubt that he went on until the financial crisis came; and then he stepped over the line (which was so narrow) between a somewhat shady but legitimate transaction and a crime. He would endeavour to prove that on Feb. 17 the prisoner did cross that line, and did commit a criminal act. He had previously lived at Stockton, and was in the employ of the Corporation Gas Department. At that time he had an account with the North-Eastern Bank at Stockton—an account of an ordinary nature, and one which might have been expected of a man in his position. He came to Maidstone, and by arrangement continued his banking account with the Stockton Bank. For some time the account was continued in the ordinary way; but a few years ago prisoner deposited with the Manager some Maidstone gas securities—sufficient to enable him to allow a small overdraft on the account. Towards the end of last year, the Manager had begun to notice that the dealings were getting of a somewhat large nature; and he thought it right to draw Kindler's attention to the fact. Between Aug. 1, 1907, and Dec. 31, his turnover was within a hundred pounds of £16,000; and from Jan. 1 this year until Feb. 22 (within a few days of the alleged offence) his turnover was £18,000—making £34,000 at that one bank during this short period. On Dec. 31, apparently prisoner had a balance in the Stockton bank of £562. On Jan. 1, this amount was more than drawn out. Since then, the account had been in such a condition that, had Kindler not kept it on the right side almost day by day, the Manager would have stopped it long before he did. He then read correspondence between the Manager and prisoner, showing that on Feb. 7 the latter sent a telegram to the Manager saying he was posting £500; but the following day he dispatched another telegram saying he was on his way to Birmingham, and adding that he did not post the money the previous night, but would wire it that day. On the same day, the Manager sent prisoner a telegram announcing the presentation of a cheque for £735, and stating that the account was £200 short. On Feb. 8, Kindler received a letter acknowledging the receipt of a remittance for £480; and the Manager further stated that he could not understand prisoner's action in issuing cheques when his funds could not meet them. He asked him not to carry on any such transactions again. The Manager's letter also contained the sentence: "There appears to be more in it than dealings in the Maidstone Gas Company's shares." On Feb. 9, the Manager received a wire stating that "£200 will reach you before 10 o'clock to-morrow morning"; and the following day he had a letter from Kindler, regretting putting the bank to any trouble, and explaining that it was purely a matter of miscalculation. On Feb. 10, the Manager received a telegram from prisoner asking him to wire to Gravesend sanctioning the payment of a cheque; and in reply the Manager said he had wired the London and County Bank, Gravesend, to the effect that he was still £80 short. On the same day he wrote to the accused acknowledging the receipt of a money order for £280 to his credit, and informing him that he had intimated to the London and County Bank, Gravesend, that the cheque for £735 was paid. On Feb. 11, prisoner wired to the effect that he had missed the post, and that he would send £200 before noon the next day. This amount duly arrived; and in a letter the same day Kindler enclosed £150 to be placed to his credit. In acknowledging these amounts, the Manager asked for a reply to his letter in which he requested an explanation of the transactions. On Feb. 12, there was a letter from prisoner enclosing a draft for £200 to be placed to his credit, and a postscript saying he would wire £250 or £300 before noon the next day. On Feb. 13, a telegram was received enclosing a telegraph money order for £380, and stating that he was posting £2000 that day. On Feb. 13, the Manager wrote acknowledging the receipt of the £380, and of the £200 sent the previous day. On Feb. 14, Kindler sent a telegraph money order for £150, and stated that £1200 was following before 4 o'clock. On the same day, a telegram was sent to prisoner explaining the condition of his account, which then, to meet cheques which had been presented, was £452 short. On Feb. 14, Kindler sent a telegram enclosing a money order for £350, and saying that £100 was to follow, and that he was also posting £900 in addition. In reply, the Manager said: "I wired you stating that the cheques were all in, and that your account was £450 under." The Manager added that the transactions were creating a great deal of trouble, and must be discontinued until a satisfactory explanation was received. Prisoner wired the next day: "Sending telegraph money order for £300;" and on Feb. 15 the Manager wired him acknowledging the receipt of this amount, and of £1200 to his credit from the London and Provincial Bank. Later the same day £110 was received from Kindler, and also a message saying: "I am leaving this morning, and have securities. Hope to see you Monday."

This showed that prisoner was perfectly aware at that time that his account, to say the least, was very much overstrained. On Feb. 15, there was a letter, also of great importance, sent by the Manager to Kindler. This letter announced that the bank had returned or dishonoured a cheque for £900, and added that the cheque should not have been issued unless prisoner was prepared to meet it on presentation. The Manager also asked him to refrain from issuing further cheques until he had explained his position, and intimating that in future his account must be kept in credit. On Feb. 17, a letter was forwarded by the Manager stating that cheques—Hickmott £330, Hewitt £655, and Day £141 11s.—had been presented for payment, and held over until the following day. On the same date, prisoner wired that he had just returned home very unwell; and that if he were informed of the amount of money required, his friends would remit it. On Feb. 18, he wired that a draft would reach the bank that day, and the Manager replied that his account must for the future be kept in credit. As no reply was forthcoming, the Manager wrote that the account must be closed. On Feb. 15 and 18, cheques were returned amounting to £4432, and on Feb. 19, 20, and 21, further cheques to the amount of £2893 11s. were dishonoured—making a total of £7325 11s. These cheques ought to have been provided for at the Stockton bank on that day; and from the correspondence it was perfectly clear that prisoner knew the cheques could not be met unless he placed sufficient funds in the bank to do so. He had been warned as to the condition of his account; and in the face of this, he gave the cheque for £300 to Mr. Day. On the morning of Feb. 17, prisoner went to Mr. Day and obtained from him a cheque for £300. He then went to the London and Provincial Bank at Maidstone, paid this cheque into his account, and wrote a cheque for the same amount on his account, for which he received £300 in notes. None of these notes did he use for the purpose for which he said he required the money—namely, to pay for debenture stock. The same morning he paid Mr. Tomlin the sum of £170 in these notes, and gave him another cheque; and in the afternoon he saw Mr. Walter Cox, jun., and paid him £60 in notes, which was not all he owed Mr. Cox. This showed clearly what was in his mind when he got the cheque from Mr. Day.

Prosecutor, giving evidence, said he was an Auctioneer and Estate Agent, and also a Director of the Maidstone Gas Company. He knew prisoner very well as Assistant-Manager of the Company. Previous to Feb. 17, he had bought stock at witness's auction sales, and witness had sold stock for him, but had previously had no such dealings with him as the one in question. On the morning of Feb. 17, prisoner said: "I have bought some of our debenture stock, and have to pay for it to-day. Can you let me have £300? I shall have the money to-morrow morning, and will bring it to you; or if I do not, will you pay in this cheque?" He then handed over his cheque for a similar amount, and added: "I have not any certificate which I can deposit with you as security; but I will bring you the money to-morrow." He further reported that the cheque would be met in the ordinary way. Witness did not notice whether it was post-dated or not.

Cross-examined by Mr. BRENNAN, witness stated that the prisoner came to the Gas Company with the best possible character. He believed his salary was about £300 a year. Witness sold £500 and £300 worth of stock for prisoner; and he paid him the result of that sale, less commission. Witness paid him £1100, which represented the stock, less commission and stamp duty. The stock was sold for £1120. Previously Kindler had always completed his transactions. On Feb. 17 witness handed prisoner his cheque, and received Kindler's in return.

Mr. BRENNAN: I put it to you that you did not attach any importance to his cheque at all?

Witness: It was the *crux* of the whole thing.

Did not you regard this part of the transaction as of minor importance?—No.

Prisoner did say: "I shall have the money to-morrow; and if I do not, you can pay the cheque in?"—Yes.

Did you attach most importance to the promise to pay to-morrow or the instruction to pay the cheque in if he did not?—I did not attach any particular importance to one in comparison with the other.

Did you attach any importance to his statement that he would have the money to-morrow?—Certainly.

I will put it in another way. Did you rely in any way upon his statement that if he did not bring the money the next day you might pay the cheque in?—I relied upon his statement that he would bring the money or the cheque would go through.

You did not rely entirely upon the cheque?—I relied upon the whole transaction.

You knew prisoner was earning only £300 a year?—Yes; about that.

Did you ask him for any security?—He offered it to me before any suggestion could be made.

Do you call a cheque a security?—It all depends on who draws it.

Have you tried to find out whether Kindler took up some gas shares that afternoon?—No; I have not.

Do not you know that the cheque paid on Feb. 17, "£441 to Hamilton," was for gas stock?—No.

Do you suggest that he did not buy stock with it?—I do suggest that he did not pay for stock with my money.

You knew Kindler had been unwell for some considerable time; and he was actually under Dr. Hoar at this date?—I knew he was ill at the end of last year.

You have heard it said that Kindler's transactions were very large. Do you know they amounted in six weeks of this year to £45,000, spread over his three banking accounts?—No.

Tell me, as a man of business, suppose Kindler very seldom filled up the counterfoils, it would be extremely difficult for him to tell what cheques drawn were falling due?—It is so different from my habits of business, that I cannot suppose it. I cannot conceive a man doing as you suggest.

Look at these counterfoils and see—not one in fifteen, perhaps, is filled up?—It is a fact he has not filled them up.

Is it not simple and clear that it would be difficult for a man with transactions amounting to £45,000 in three months to know when his cheques became due under such circumstances?—It seems absurd.

Do you seriously suggest now that Kindler intended to defraud you?—I have no doubt about it.

If Kindler had come to you on Feb. 19, and told you he had made a complete miscalculation, and could not meet the cheque, would you have thought of false pretences?—After I had found out the facts as I have since ascertained them, I should say it was a most deliberate false pretence.

Re-examined by Mr. MONCKTON: If prisoner had not handed him the cheque, he would not have advanced the money. He quite understood the £300 was to purchase debenture stock.

Mr. BRENNAN at this point rose with an objection. He said it was essential to prove a case of this sort that there should be an existing fact at the time the false pretence was alleged, and not a promise for the future. Mr. Day said the prisoner had obtained the money by giving him a post-dated cheque, and stating that when the cheque became due the money would be forthcoming. That was not an existing fact, it was rather a statement of a fact which would exist some time afterwards, when the cheque became due. He quoted a case in support of his contention, and proceeded to ask how Mr. Day could possibly say he was induced to part with his money by false pretences. By law or logic it was impossible to show that there was any false pretence whatever. If a man came and ordered £300 worth of goods, saying he would pay on the morrow, and did not do so, that could not be said to be false pretences. This was exactly what prisoner did.

Mr. MONCKTON, in reply, pointed out that the law was plain that it was a false pretence for a man to obtain money by giving a cheque on an account when he knew that the cheque would not be honoured.

The Bench decided that the case must proceed; and after evidence of arrest had been given,

Mr. *C. F. Thornhill*, Manager of the North-Eastern Bank at Stockton, bore out the opening statement of Mr. Monckton.

In answer to Mr. BRENNAN, witness stated that the account might be described as a "hand-to-mouth" one; and after some hesitation he admitted that the account was kept in order up to Feb. 18. He further admitted that Kindler had been allowed an overdraft, over and above his securities, of £350. The bank received cheques on Feb. 17 amounting to £2500. These were not discharged there and then, but were held over, witness expecting that they would be met the next day. On Feb. 17, prisoner actually wired to know if certain cheques were safe. He could not say whether miscalculation was more likely to be responsible for the trouble than a criminal act. Kindler gave him no indication that he would be likely to commit a crime.

Mr. *Joseph Tomlin*, pawnbroker, of Maidstone, said he had dealings with prisoner in February with reference to Maidstone gas stock. On Feb. 11, he handed witness a cheque on Lloyds Bank for £650 which was due; and after sending several notes putting off the payment, he visited witness on Feb. 17, and paid him £170 in notes, and explained that he could not then pay the rest as he had just bought £600 worth of debenture stock.

Mr. BRENNAN (in cross-examination): What do you complain of?

Witness: I do not complain of anything particularly.

You have very good reason not to complain?—No; I have very good reason to complain.

On Feb. 3 or 4, did you hand £500 to Kindler to deal with for you?—Not exactly to deal with for me.

What for then? Was it your money?—It was my money.

What did he do with it?—He told me he had sold £1000 worth of stock.

On Feb. 8 did you receive £561?—No; on the same day.

The £61 you put into your pocket?—I paid the cheque into the bank.

So that in one day you made £61?—But in three weeks I lost £369.

Continuing, witness said he went to the gas-works on other business; and while there, Kindler said he had a deal on, and had sold £1000 worth of gas stock, and the profit would be £122. He added that he had all the money to pay for it except £500, and if witness could find it he should have half the profit. On the spur of the moment, he said he thought he could manage it for him; but he told him he would not take half the profit. After making a few inquiries, he felt satisfied that he was dealing in gas stock; and he let prisoner have the £500.

Mr. *W. T. Cox*, surveyor, stated that on Feb. 17 Kindler owed him £229; and on that day, at the gas-works, he handed witness £60 in notes.

Cross-examined by Mr. BRENNAN, witness said he had had previous dealings with Kindler, and that, though he had made a profit on some transactions, he had lost in the aggregate.

Mr. BRENNAN: Has he paid you £150 per week for seven or eight weeks?

Witness: No; certainly not.

What is the amount he has paid you weekly?—Speaking from memory, I should say from £70 to £80 some weeks. Witness added that the transactions were all in the nature of gas stock. He had always found Kindler straightforward; and it was a great surprise to him that he should be charged with a criminal offence.

The case for the prosecution was completed by evidence as prisoner's financial transactions by cashiers at the Maidstone branches of the London and Provincial Bank, Lloyds Bank, and the London and County Bank.

Kindler, in reply to the charge, pleaded "Not guilty."

After a short deliberation, the Magistrates committed prisoner for trial at the forthcoming Borough Quarter Sessions. Bail was fixed at £300—prisoner in £100, and either two sureties of £100 each or one of £200.

Slot-Meter Robberies at Portsmouth.—Several daring depredations from the prepayment meters of the Portsea Island Gas Company were investigated by the Justices at Portsmouth on Monday last week. The prisoner—a young man of 24, named Edward Benjamin Tulley—used to obtain keys of empty houses in order, as he said, to view them; and when he was unsuccessful in getting a key, he opened the door with one he carried. At his lodgings six latch-keys, nine other keys, a file, and a vice were discovered by the police. From three gas-meter boxes 1s. 8d., 1s. 4d., and 2s. 8d. had been abstracted by forcing open the lock. He was sentenced to three months' hard labour—one month on each charge investigated.

MISCELLANEOUS NEWS.

OPPOSITION TO THE GOVERNMENT COAL BILL.

Important Meeting of City Men.

In accordance with the announcements which appeared in our columns, a large meeting of City men was held in the Great Hall of the Cannon Street Hotel last Tuesday afternoon to protest against the Coal Mines (Eight Hours) Bill which has been introduced by the Government. Lord NEWTON presided, and among those present were Sir John Ellerman (representing shipping), Mr. Temple Franks (of the Railway Companies' Association), Sir George Livesey (representing the gas industry), Mr. Charles Charleton (Chairman of the London Chamber of Commerce), Mr. L. A. Martin (Chairman of the London Waterside Manufacturers' Association), and Mr. G. E. Raine (the Organizer of the Coal Consumers' Defence League).

Lord NEWTON, in opening the proceedings, observed that the meeting was convened for the purpose of pointing out the serious objections to a measure which might possibly be some advantage to one section of the community, but would obviously be most disadvantageous to everybody else. In spite of the fact that a similar Bill had been before the House of Commons for many years, and that its second reading had been frequently carried, he had no hesitation in asserting that no one had ever succeeded in proving that it was necessary or even desirable in the interests of the health and safety of miners. Nor had anyone succeeded in proving that the miners themselves were unanimous on the question of its desirability. All that had been proved was that the Miners' Federation of Great Britain were in favour of the measure, for a reason which certainly would not commend itself to the general community. The humanitarian plea upon which the advocacy of the Bill had been so largely founded must have been shattered by the evidence given before the Departmental Committee; and it was about time that the myth was exploded that the ordinary miner was a poor, helpless individual, who was tyrannized over by his employer, and was incapable of looking after his own interests. The humanitarian plea being dead, they were now told, in so many words, that the Bill must pass, not on account of its intrinsic merits, but because it was a measure which had been for many years before Parliament, to which many members were pledged, and which was supported by a powerful organization. To his mind, these reasons were altogether insufficient. There was one solid fact which stood out in the controversy—that, whether or not the Bill passed in its present form, or even whether it was so modified as to approximate to the law obtaining in France, it was absolutely certain that it would result in a great reduction in the output of coal, and in a corresponding advance in the price. Putting aside all such matters as interferences with adult labour and the like, the great question they had to face was whether it was necessary or desirable, whether it was fair, that the whole community should be penalized on behalf of one single section, upon whom it was proposed to confer a problematical benefit.

Sir JOHN ELLERMAN moved—"That this meeting is of opinion that the Eight Hours Bill for Miners now before Parliament will, if carried into law, disastrously affect the commerce of the country and the welfare of the people; and strongly urges the Government therefore not to proceed further with the Bill." He declared unhesitatingly that if the Bill became law in its present form it would materially decrease the output of coal and largely increase the cost of its working. To the producer alone the increased cost could not be put at less than 1s. 3d. to 1s. 6d. per ton; and as the colliery owners would only receive their profits on a smaller output, these would also be decreased, unless there was such a shortage of coal occasioned by the Bill as to cause fancy prices to be paid, when the colliery owners and middlemen would get the benefit, and the consumers would pay still more. Any increase in the price of coal consequent upon the reduction of the output would be disastrous to many industries of the country that depended for their existence upon cheap fuel; and to none more so than shipping. Careful estimates of the reduction of output based upon the total output of 1906 indicated that the loss of production would be 34,444,170 tons, and even more, on the output of 1907. His own experience as a colliery owner led him to think that these figures under-estimated the shortage, because, unless fancy prices were paid by the consumers, many of the older and nearly exhausted collieries would be compelled to close down altogether. Had the output of coal been less last year by anything like 35 million tons, or even 25 millions, or, for that matter, 15 millions, there would have been such a scarcity of coal that, dear as it had been, it would have cost at least 4s. to 5s. per ton more, and have driven many firms to close their manufactories. In his own colliery, which had a production of over 600,000 tons—equal to nearly 1-400th part of the whole production of the country—his managers estimated the increased cost, if the Bill were passed, at 1s. 3d. per ton at least. This was equivalent to nearly 20 per cent. on the cost; and in many other collieries it would be even greater. In his own shipping business, and that of his late firm of Leylands, the consumption of English and Welsh coal last year for bunker purposes exceeded 800,000 tons, irrespective of about 115,000 tons of foreign coal. It was, he felt sure, a very moderate estimate to say that if two firms alone used 800,000 tons, shipowners as a whole employed upwards of 30 million tons of coal yearly for bunker purposes; and it was more likely to be 40 millions. An increase of 1s. 6d. per ton on even 30 million tons was £2,250,000 yearly, which shipowners in the aggregate would have to pay; and this meant in most cases the difference between a profit and a loss. It would result in more steamers than even now being laid up, or, in the alternative, rates outwards would be raised; and the English merchant and manufacturer would have to pay more for freight, and be thereby handicapped in competition with the foreigner. In consequence, food, flour, and the cost of living would increase, and thus the whole community (including the very poor) would suffer, in order that a section willing to work should pay for another who desired to work shorter hours and be equally well paid, but who had votes. It was really Protection in another form. Apart from the injury which the laying-up of ships would inflict on commerce through the serious curtailment of the facilities for transport, the community at large would have to pay, he estimated, at least £15,000,000 per annum more for their coals. The Bill was a socialistic measure, the great damage of which lay in the fact that it struck at the liberty, the power, and the wealth of the nation, and, instead of giving equal liberty to all, imposed upon all the will of the least educated, but most highly organized, section of the community.

Mr. W. TEMPLE FRANKS, in seconding the motion, quoted the opinion expressed in a letter he had received from Lord Claud Hamilton, the Chairman of the Great Eastern Railway Company, to the effect that unpatriotic class legislation of this description, involving compulsory interference with the law of supply and demand, must inevitably result in a permanent increase in the cost of coal, and therefore of railway working, decrease in the interest paid to railway shareholders, restriction of travelling facilities, and the throwing out of employment of a large number of railway servants. Continuing, the speaker said the consumption of coal by the railways last year amounted to 16 million tons or more; so that an increase of even 1s. a ton would mean an additional cost of £800,000, while if the rise were 2s. a ton, the extra burden would be something over £1,500,000 per annum. There were 600,000 railway shareholders in the country, 50 per cent. of whom had holdings of £500 and less. Many millions of railway capital received no interest whatever, and the average interest paid upon the whole railway capital of the country was very little more than 3¼ per cent. per annum. The passing of the Eight Hours Bill could only result in the further diminution of this already small rate.

Sir GEORGE LIVESEY supported the resolution in the interests of the gas manufacturing industry. He said no definite statement had ever been forthcoming as to why the Bill was being promoted. In his opinion, the promoters had two objects in view—one being the Socialist idea of a universal eight-hours day. The Miners' Federation was led by Socialists, and their idea was an eight-hours day for everybody. The other object the promoters had in view was to do less work and get more pay for it. So far as the gas companies were concerned, they should transfer to the consumers the extra cost of coal. He claimed, in this matter, to speak for the inarticulate millions who could not speak for themselves. The London Gas Companies now supplied some 1,100,000 consumers, the greater proportion of whom were poor. If the price of coal was increased by 1s. 6d. a ton, the companies would put up the price of gas by 2d. per 1000 cubic feet. He took the view that unless the Government were perfectly certain that the Bill would not increase the price of coal, they had no right to pass it at all. In times of panic, it was the fear of shortage rather than the shortage itself that sent up prices. The very fear of shortage, bringing about a rise in price, would be the immediate result of the passing of the Bill. The decadence of England had surely come when grown men asked to be treated as children.

Mr. C. CHARLETON declared that the obvious effect of the Bill would be to increase the price of coal all along the line by 1s. 6d. or 2s. per ton, and that even the possibility of such a result ought to be a reason for the Bill being immediately dropped. Speaking for his own industry of cement-making, he took it that the effect of the Bill would be to compel them to raise the price of their commodity at least 1s. per ton; and in the condition of the trade and the state of foreign competition, such an advance would be almost impossible. Fuel (coal and coke) entered to the extent of about one-third into the cost of manufacture; and he believed that if the Bill were to pass, the cost to the trade would be something like £250,000 or £300,000 per annum. As they could not, like the gas companies, place the burden directly upon the consumer, in the face of foreign competition, such an advance in the price of fuel would restrict the manufacture of cement, and an enormous number of the 15,000 people employed in the trade would be thrown out of work. The Bill was a restrictive one, and was both unnecessary and pernicious. Bills of the kind led to the paralysis of enterprise and the curtailment of the trade of the country.

Mr. L. A. MARTIN also supported the motion. He said the London Waterside Manufacturers' Association, over which he presided, represented capital to the amount of something like £100,000,000, and its annual consumption of coal ran to about 5 million tons. If the effect of the Bill were permanently to raise the price of coal to anything like the extent to which preceding speakers had referred, the industries embraced in the Association would not only be seriously handicapped, but some of them would be permanently crippled. They had made inquiries within the Association as to the effect which an enhanced price of coal would have upon their different industries; and the answers returned pointed to the abandonment of unremunerative works, the lessening of profits, the sacrifice of capital, the stimulation of American and Continental competition, the throwing of men out of employment, and the reduction of wages for unskilled labour.

Mr. G. E. RAINE was the last speaker. The point on which he laid special emphasis was the necessity for carrying on a vigorous campaign against the Bill, and awaking the whole country to the disastrous effect it was bound to have upon our national industries.

On the Chairman rising to put the motion, a gentleman in the hall expressed a wish to move an amendment; but as he acknowledged that he did not represent any industry, the meeting declined to hear him.

The CHAIRMAN then called for a show of hands in favour of the motion, and practically everyone in the hall held up his hand. On his asking for votes to the contrary, only one hand was upheld - that of the would-be mover of the amendment.

Opposition by Chambers of Commerce.

At the Annual Meeting of the Association of Chambers of Commerce, held at the Hôtel Métropole last Wednesday, the Standing Orders were suspended in order to permit of the discussion of the Coal Mines (Eight Hours) Bill.

Mr. F. WARDLE (the President of the Leeds Chamber of Commerce) proposed—"That this Association, being of opinion that the proposed Coal Mines (Eight Hours) Bill, if passed into law, will seriously limit

the production and increase the price of coal, and is not needed in the interests of the men, protests against the passing into law of the Bill, and desires the executive to at once submit this opinion to His Majesty's Government." In support of his motion, the speaker said he did not think the importance of the Bill had been fully realized. There could not be a doubt that a diminished production would be the result of its passing; and every man in the room would know that if the output was restricted by 10 per cent. there must be a large rise in the price. A rise of 3d. per ton would deprive many houses of orders in the steel and iron industries. The Chambers should impress upon their respective Members of Parliament that the passing of the Bill would have the effect of crippling local industries; and a petition had been prepared which the representatives in attendance would be asked to sign, so that it might be presented against the second reading of the Bill. This was not a question between the coal miner and the coal owner, but one between the coal miner and the consumer and the workers in other industries, who would have less employment and less wages under the proposed new conditions. There was no object in the Bill except to limit the production of coal and raise the price of getting it.

Mr. HOBSON (Sheffield) seconded the resolution, and complained bitterly that the present Government, which came into power as a firm Free Trade one, had selected the coal industry to give assistance to the producer—limiting the output to the manifest disadvantage of the consumers, whom the Government considered it to be, in the ordinary way, their first duty to protect. He did not object to the miners doing their best to better their conditions; but the attainment of this object should be left to the ordinary position of supply and demand. The great objection he had was that the Bill unduly interfered with adult labour, without in any way ameliorating its condition.

Mr. HERBERT SHAW (Newcastle) said the Bill was one which affected the commercial welfare of the whole country, and its effects upon the public and the consumer would, from all that could be learned, be extremely injurious. Every deputation which had waited upon the Home Secretary had pointed out in emphatic terms the vital point of the Bill—viz., that the reduction of working hours would contract the output and increase the price; and this view was supported by the Departmental Committee, which the Home Secretary himself appointed in July, 1906. To railway companies, with 1s. per ton increase, it would mean more than £800,000 per annum. Take the effect on shipping. If freights did not pay at present, what would they do if more had to be paid for bunkers? They could not possibly recoup themselves in the present state of the market. It should be remembered that the miner had his wages determined on a sliding-scale, based upon the selling price of coal. It was to his interest that coal should be as dear as possible; and the Government were helping to make it so. Mr. Gladstone admitted that the effect of the Bill as it now stood would be to restrict the output, and that it required amendment; but coal consumers were of the unanimous opinion that it wanted more than amendment—it wanted withdrawal.

Mr. GOLDSWORTH (Newport) said, as representing a large coal shipping port, he desired to strenuously oppose the Bill. He and his Chamber looked upon it from the decreased output point of view, which would seriously affect the shipping community. It was bound to affect the wages of such workers as dockers, tippers, and trimmers; so that while it might benefit the colliers, it would seriously hamper the wage-earning capacity of the shipping community generally.

Sir JOSEPH BELLAMY (Plymouth) supported the motion. He said he was connected with a Gas Company who were in the proud position of bringing coal from Newcastle and supplying gas cheaper than it was supplied in Newcastle itself. The Company worked on the sliding-scale, by which nine-tenths of the surplus went back to the consumer. Consequently, nine-tenths of any increase in cost would fall on the consumer. He hoped no amendment to the Bill would be accepted, and that they, as business men, would insist on its withdrawal.

Mr. CHARLETON (London) said the Bill was of a socialistic nature, and its principle would soon be applied in other directions. It would paralyze enterprise and curtail trade. The first person to feel the brunt would be the working man, who would not only have to pay a higher price for his coal and gas, but would get less wages.

The resolution was carried, with only two dissentients.

Opposition of Large Consumers.

The coal consumers of Cardiff, recognizing that the Bill, by limiting the hours of miners' labour, will materially increase the cost of coal to all consumers, have resolved that the Bill should be most strenuously opposed; and, in order to give effect to this resolution, a strong Sub-Committee has been formed to organize public meetings, arrange for speakers, and to use every legitimate means to inform the public of the pernicious character of the Bill. A large meeting of consumers was held on the Exchange on Monday last week to protest against the Bill, Mr. J. Hurman (of the Cardiff Railway Company) presided; and among those present was Mr. George Clarry, the Secretary of the Cardiff Gas Company. The Chairman stated that if the Bill passed, the actual work on the coal would be reduced to something like six hours per day, and the production would be diminished by about one-third of what it was at present. The result would be that the cost would be increased, and the older collieries would have to suspend operations altogether. He moved a resolution to the effect that the Bill, if passed, must materially increase the cost of coal to the consumer, thereby causing grave injury to all sections of the community, and urging the Government to withdraw the measure. The motion was carried unanimously.

Speaking at a meeting of the South Staffordshire Mines Drainage Commissioners recently, the Chairman (Mr. George Macpherson) referred to the recent speech on the Eight Hours Bill of Mr. Albert Stanley, M.P., in which that gentleman said that the concession need not advance the price of coal. He (the Chairman) asserted, on the contrary, that there was not a mine owner from Land's End to John o'Groats who would not be affected by the measure. They could not afford to draw water for 16 hours in order to work eight hours; and the result would be that an advance in the price of coal would be necessary beyond what their customers could pay. He asked that the Secretary should convey to the Board of Trade their views on the matter. Mr. Cay said he noted that the Labour Party (who renounced Protection) advocated restriction of output, which would, of course, add to the cost and increase the number of unemployed. The increased cost of getting coal he put at 1s. 6d. per ton, which would add 6s. per ton on iron. This would knock Englishmen out of competition with the foreigners.

The Coal Question in the Lobby and in the House.

Last Wednesday evening, a deputation from the London Waterside Manufacturers' Association, the Shipping Federation, the London Chamber of Commerce, the London and District Federation of Engineering Employers, the Shipbuilders and Engineers Employers' Association of London, and the London Chemical Manure Manufacturers' Association waited on the London Liberal members at the House of Commons to urge their views as to what would be the probable effect on the industries, shipping, and commerce of London in the event of the Coal Mines (Eight Hours) Bill becoming law. The meeting was presided over by Mr. Causton; and a number of London Liberal members attended. Sir George Livesey, Mr. L. A. Martin, Mr. D. Milne Watson (the General Manager of the Gaslight and Coke Company), and others, contended that a restriction in miners' hours of labour by Act of Parliament would mean an increase in the cost of coal, and that such increase would have a serious effect on the general consumer in London, the shipping and the manufacturers on the river, and in other places in and around the Metropolis. The deputation were informed, in reply, that their representations should have careful consideration by the members present.

In the House of Commons, the following day, Captain Craig, the Member for East Down, asked the Home Secretary whether he intended to proceed with the second reading of the Coal Mines (Eight Hours) Bill; and whether he was aware of the number of memorials against the measure which were being daily received by members from all parts of Ireland. Mr. Gladstone said the answer to the first part of the question was in the affirmative. As to the second, he had received three memorials from Ireland; but he did not know how other honourable members had fared. Captain Craig asked whether the right honourable gentleman was aware that great inconvenience was being caused owing to the difficulty of entering into new contracts for coal while the Government were wobbling on the subject. Mr. Gladstone said he was quite satisfied there was no inconvenience.

An Eight-Hours Day for All.

In the course of the debate last Wednesday on the motion by Mr. Clynes, the Labour Member for North-East Manchester—"That, in the opinion of this House, the time has arrived when, in the interests of the workers generally, and in view of the present large number of unemployed, the working day in all trades and industries should be limited by law to a maximum of eight hours"—some remarks were made by Mr. Herbert Samuel, the Parliamentary Under-Secretary for the Home Department, on the subject of the Coal Bill, which are worth reproduction. He agreed with previous speakers that it was impossible to ask the House to accept so sweeping and unqualified a resolution; and, therefore, it ought not to be placed on the records of the House. But to say this was not to deny that a shortening of the hours of labour in many cases was desirable, or that the State could do nothing to effect it. Four-fifths of the population of this country belonged to the working classes. If any large proportion of them were degraded, the effects could not fail to be felt through the whole body of the nation. As regarded the general sentiment, he thought that the House would be in agreement with the mover of the resolution; but he (Mr. Samuel) could not admit the soundness of the argument that in the general and permanent reduction of the hours of labour would be found any effective solution of the problem of unemployment, though a temporary reduction of hours in times of trade depression might spread the sacrifice over a larger area. If the reduction of hours from ten to eight would bring large additional employment, the process could be continued until we reached the absurd conclusion that if the working classes only worked one hour a day instead of ten hours we should be able to support in prosperity a ten times larger population. At the same time, the reduction of the hours of labour and the extension of leisure were obviously desirable things in themselves. What they had to consider was how far it was legitimate and practicable for the State to intervene to secure these boons. There were two lines of action on which it was practicable for the State to proceed. In the first place, it was the duty of the Government to make its own employment model employment. This principle had been accepted by the House; and in the War Office, the Admiralty, and the Post Office, an eight-hours day had already been established by administrative action. Further than this, the State could in many ways take steps to get rid of the worst evils of excessive hours in private industry. The Factory Acts had been exceedingly successful; the Acts relating to the railway service proceeded in the same direction; and the Early Closing of Shops Act had achieved some good, though it clearly needed strengthening. This year they were asking the House to take the longest step ever taken forward for the limitation of excessive hours of labour by passing the Mines (Eight Hours) Bill. It was often thought that already there was a majority of miners underground employed eight hours or less; but this was not the case. Of the 700,000 workers underground, three-fourths worked more than eight, and many of them excessive hours. In Lancashire, the ordinary hours of hewers below ground were nine-and-a-half, and of the other workers below ground ten-and-a-half. One of the reasons why opposition to this Bill must be regarded as exaggerated was that the opponents never made allowance for the fact that under an eight-hours day the hours of labour would be distributed more equally, because of the fewer holidays that would be taken. The opposition to which he had referred was based on a most excessive estimate of the possible cost of introducing an eight-hours day in mines. The Home Secretary had received deputations which had represented to him that the passing of an Eight-Hours Bill would permanently increase the cost of coal from 1s. 6d. to 2s. a ton. This was

a fantastic estimate, supported by no argument. It was an absurd exaggeration of the probable or even the possible effect of introducing a Mines (Eight Hours) Bill, and was borne out in no degree by the findings of the Committee who examined the economic effect of establishing an eight-hours day. It was not his task to enter now into an argument on the merits of the Eight-Hours Bill. What he had to say was that it was the intention of the Government in this session of Parliament to proceed, and proceed actively, with the Bill; and though some amendment in matters of detail might be necessary, they trusted that they would be able to secure this year, for a very large class of men engaged in exceptionally arduous, dangerous, and unattractive labour, that larger leisure which was one of the first conditions of a satisfactory life.

A Leaflet by Sir George Livesey.

The following statement, dated the 18th inst., has been issued by Sir George Livesey in the form of a leaflet, in view of the Parliamentary Election for Peckham:

THE COAL MINES (EIGHT HOURS) BILL.

The Government have adopted and are promoting a Bill in Parliament to limit the hours of labour in coal mines to eight hours daily from bank to bank, which will reduce the actual working time to about 6 hours 21 minutes on the average. The real promoters are the officials of the Miners' Federation, backed, of course, by a proportion of the men; but they have never given their reasons, or any reason, for the Bill, beyond saying: We have been asking for it for twenty years, and it is time it was passed. They would not give evidence to the Committee appointed by the Government last year, and still maintain silence on the subject. Therefore we may conclude that a good reason for the Bill cannot be produced. I have an opinion on the subject, but feel it best to confine myself to the consideration of the effect of the Bill if passed.

It will reduce the average time of getting and winding coal at least 10 per cent., and will diminish the output accordingly for a time at least; and this will certainly cause an increase in its price, just as the extra demand did last year. Then the cost of getting coal must be greater, for it is certain that the miners will not take less money for their reduced hours of working, while the standing charges for working the mines cannot be reduced. If the miners could have shown that their demand is reasonable, it would have been unreasonable to object to it; but as they have not, and I suppose cannot do so, the consumers of coal have the right to look at the matter from their point of view.

The lowest estimate of the increased cost of coal is 1s. 6d. per ton, due to extra cost of working only; but how much more it will be as the result of the reduced output, no one can tell. It will be safe to say that the price of gas will be raised 2d. per 1000 cubic feet, which will reduce the dividend, in the case of this [South Metropolitan] Company, 5s. 4d. per cent., and the co-partnership bonus 1½ per cent. The consumers will lose £104,000 a year; the shareholders' loss will be £16,000 a year; and the employees' loss of bonus alone will be £7500 a year.

The employees will lose in four directions: (1) Dearer coal; (2) dearer gas; (3) reduced dividends; and (4) reduced bonus. And for what? To do by Act of Parliament, for the most powerful body of men in the kingdom, what never has been done for any body of adult men—viz., limit and regulate the hours they may work, as if they were children. This certainly would not be to their advantage, and it would most certainly be to the disadvantage of every trade and industry and every user of coal in this country.

What can we do? Well, in fact, the only course open to us is in every possible way to make it clear to the Government that they must drop this totally unnecessary and mischievous Eight-Hours Bill for Miners.

In a note appended to the foregoing statement, Sir George says: Since writing the above, Mr. Herbert Samuel, M.P., Under-Secretary to the Home Office, has made a speech in the House of Commons in opposition to the General Eight-Hours Bill, and then referring to the Mines (Eight Hours) Bill, said that the statement made by coal owners and coal users to the Home Secretary of a serious increase in the cost of coal "was a fantastic estimate, supported by no argument." [See above.] Now, this is not true, for Mr. Samuel was present when very forcible arguments were used by the iron and steel makers and the representatives of the gas industry. It is true that the other side have not supported their demand by any other argument or reason than that they have been asking for such a law for twenty years. Mr. Samuel also said our statement as to the increased cost if the Bill passes "was an absurd exaggeration of the probable or even possible effect of introducing a Mines (Eight Hours) Bill." Why, even its introduction has already hardened the price of coal. Mr. Samuel finished by saying "it was the intention of the Government to proceed, and to proceed actively, with the Mines (Eight Hours) Bill." The Government, therefore, having treated with contempt all the representations that the users of coal have made, it becomes necessary to teach the Government, in the most effective way, that the country disapproves of their action. Men of Peckham, you have now your opportunity of protecting your own interests, and of rendering a great service to the country.

Further comments upon Mr. Samuel's speech were offered by Sir George Livesey in the following letter, dated the 19th inst., which appeared in "The Times" last Saturday:—

The Under-Secretary of the Home Department, speaking for the Government on the general Eight Hours Bill, which they opposed, said it was their "intention to proceed, and to proceed actively, with the Mines (Eight Hours) Bill" in the present session; and he also spoke with something akin to contempt of the statements of the users of coal—saying that their opposition "was based on a most excessive estimate of the possible cost of introducing an eight hours day in mines . . . . of from 1s. 6d. to 2s. a ton. That was a fantastic estimate supported by no argument. It was an absurd exaggeration of the probable or possible effect," &c. He was the spokesman of the Government; therefore these remarks show his and their lamentable ignorance of the question, which, I am sorry to say, seems to be shared by many Members of Parliament. We had yesterday an interview with a number of London Members, as reported in "The Times," and were certainly pleased with their friendly reception and the patient hearing they gave us; but we came away depressed by the impression caused by their remarks and questions, which showed they were, with one notable exception, totally unacquainted with the subject.

The deputations of coal users to Mr. Gladstone and others are assured, from past experience, that the admitted reduction of output, whatever the quantity, consequent on the proposed reduction of hours, must seriously increase the price, which, once increased, is not likely, when supply again meets demand, to go back entirely. Then there is the certainty that the reduction of hours will increase the cost of getting coal, for the miners will not submit to any reduction of their day's pay for the reduced hours and the diminished output per man. Further, the reduced hours will not decrease the standing charges of the owners. Moreover, an increase in the sale price of coal increases the rate of pay to the men. It is therefore to their interest that coal should be dear. One of their chief officials—a leading promoter of the Bill, who, with other Members, is introducing an independent Eight Hours Bill for Miners—told a high Government official last year that coal ought to be permanently 30 per cent. higher. He also told the Governor of the Gaslight and Coke Company much the same; adding that he had done his best to induce the coal owners to combine to raise the price of coal for gas making, to the disadvantage of the consumers of gas.

Mr. Samuel said the "fantastic estimate" was supported by no argument. But are not his own arguments in the same speech against an eight-hours day in the textile, shipping, and other industries equally applicable to the coal trade? I should say more so, for no market is so extremely sensitive to any slight disturbance of supply or demand. If this Bill passes, we may well have an increase, not of 1s. 6d. or 2s., but of 5s. or more per ton. The disturbance caused by the reduction of hours will be greater than in any of the coal panics. In 1872-3 the price of gas coal free on board in the Tyne rose from 6s. to 20s. per ton. At the next panic, in 1890, it went up in two years from 6s. to 12s. The next, in 1900, the rise in two years was from 6s. 6d. to 16s.; and it never came back to the old figure. Then, last year, it rose from 7s. 6d. in 1905 to 12s. and more. The great peculiarity of the coal trade is that we must have coal, for which there is no substitute, or business stops. Therefore, anything that causes the slightest fear that the supply will be restricted or the price increased at once sends buyers into the market in order to lay in a stock; the demand is increased; and the price rises. It is the fact that the price has hardened since the first reading of this mischievous Bill. It was coming down naturally and easily; but the quoted prices of gas coal are now about 6d. per ton higher than those at which coal could have been bought a month ago. Buyers are expecting an increased price on the passing of the Bill, and so are buying in advance. But if the Bill were withdrawn, I venture to prophesy there would be immediate ease in the market.

On Tuesday last I read that Mr. W. Abraham, M.P. ("Mabon"), at the conference at Cardiff on Monday, asked the public to hear the men's reply to the "unjust opposition" to the Bill. I have been looking for this in vain, for the advocates of the measure have never given their reasons, and would not appear before the Departmental Committee. In "The Times" of Wednesday, Mr. Brace, M.P., is reported to have said, at the same conference, that "if Parliament declined to give them what they wanted, the power of that Federation in Wales and throughout Britain would be used to get what they wanted." Is this the reply, and is it meant as a threat of a universal strike of coal miners? If so, it will be the coal miners against the nation; and let the nation give the answer.

It is not for coal users to prove exactly what will be the increased cost; this no man can do. But the onus rests with the Government to prove with certainty that there will be no rise in the price of coal by their Bill. If they cannot prove that our fears are groundless, they ought to drop the Bill. It is also most objectionable, as would be a compromise, on the ground of its interference with adult labour. The best immediate answer to the Government's announcement that they will proceed with the Bill will be for the Peckham electors to speak decisively on the subject next Tuesday [to-day].

Annfield Plain and District Gas-Works Purchase.

Readers may remember that one of the Acts of last session was to incorporate a Company for the acquisition of the gas-works, owned by Messrs. Schultz and Comins, supplying Annfield Plain, in the county of Durham. The price was to be settled by a single arbitrator, and no allowance was to be made for compulsory purchase. Mr. Charles Hunt was appointed; and the proceedings before him were conducted in private, as the Company had agreed with the promoters and also with the Annfield Plain Urban District Council as to the amount to be given as the fair value of the works executed, and which they asked the Arbitrator to award. The Company were represented by Mr. F. Whinney, instructed by Messrs. Martin and Nicholson, solicitors, and the owners by Mr. R. S. Clease, instructed by Messrs. Lees, Butterworth, and M'Donnell. Engineering evidence for the Company was given by Mr. A. F. Phillips, and by Mr. E. H. Stevenson for the vendors. The books and documents of the latter had previously been examined by Messrs. Monkhouse, Goddard, and Co., chartered accountants, of Newcastle-on-Tyne, with the Clerk and Surveyor to the District Council; and the works were inspected by Mr. W. Hardie, of Tynemouth, on behalf of the Council. Statements of the actual sums paid for the orginal works, and also of the amounts expended on those executed since the acquisition, were placed before the Arbitrator, and Mr. E. H. Stevenson gave evidence in support of them. The Company having previously inspected the details of the two statements, evidence was given by Mr. Phillips in corroboration. The Arbitrator reserved his award, with a view to inspecting the works and making his own valuation; and it was published and taken up on Monday last week. He finds that the actual sums paid for the acquisition of the works at Dipton and Kyo amounted to £9711 19s. 5d., and that the fair value of those executed by the owners since the date of the acquisition was £18,000; and these sums have accordingly been awarded.

GERMAN CONTINENTAL GAS COMPANY.

Report and Accounts.

The Fifty-Third Annual General Meeting of this Company is to be held at Dessau on the 28th inst., when the report and statement of accounts for the year 1907 will be submitted to the shareholders. From a copy received through the courtesy of Herr W. von Oechelhaeuser, the General Manager of the Company, the following summary of their contents has been prepared.

The report states that there was a much more favourable development of business last year than in 1906. The make of gas increased by 8·77 per cent., as compared with an increase of 1·91 per cent. in the preceding year. The gradual quieting down of Warsaw resulted in an increase of 9·61 per cent. in the make at the Company's works there; taking the place of the decrease of 2·09 per cent. in 1906. The good trade prevailing generally till towards the close of the past year caused an increase in the make at the Company's works in Germany of 8·01 per cent., as against 5·82 per cent. for the preceding year. The profit for the past year amounted to 2,844,539·33 marks (about £138,758), which is an increase of 456,207·78 marks (about £22,254), on that earned in 1906. The profit realized from the Company's gas and chemical works at Warsaw shows an improvement; but normal working and earning conditions will only prevail again there when quiet has been more completely restored and building has been resumed.

In addition to increases in the price of materials, wages have continuously advanced in recent years at a far higher rate of increase than the rise in gas production. For instance, in the ten years 1898 to 1907, the Company's make of gas increased by 53·65 per cent.; while the total wages showed an increase of 144·56 per cent. For the last five years only, the ratio is even more disconcerting, as the make has increased by only 10·46 per cent., and the wages by 69·59 per cent. The price of coal has also continually advanced, and the increased expenditure on this account has not been fully balanced by the more favourable prices obtained for coke and other bye-products. The price of English coal is about 22 per cent. higher than ten years ago; while in the same period the price of Westphalian coal has risen about 23 per cent, and that of Upper Silesian coal about 47 per cent.

The great expansion in the use of the inverted gas-burner renders the business outlook most favourable. Its competition, from both the economical and æsthetic standpoint, has grown in all directions, and this type of burner clearly has an important future for public lighting. A more rapid spread of the Dessau system of vertical retorts is to be expected now that the suit for annulling the Company's master patent has been dismissed by the German Patent Office. The Dessau Vertical Retort Company, founded by the Company ("JOURNAL," Vol. XCVIII., p. 109), has carried out installations, in addition to those at Dessau and Potsdam for this Company, at Berlin, Cologne, Barcelona, Dortmund, Duisburg, Solingen, Ludwigshafen, Zürich, Düsseldorf, Hamburg, Aschaffenburg, Halle, Offenbach, Brandenburg, and Trieste; while there are installations now under construction at Elberfeld, Frankfort-on-the-Maine, Bockenheim, Genoa, Magdeburg, Chemnitz, Worms, and Charlottenburg. The profit from the licences granted by the Vertical Retort Company should be increased next year.

The small gas-works at Wickrath, in the Rheydt-Odenkirchen district of the Company's operations, which were acquired by the Company in 1900, passed, at the close of the year under review, into the hands of the Municipality, who have exercised their right of purchase. The purchase price covers the prime cost of the works to the Company. An extension to the end of 1932 of the concession for the lighting of Vorhalle in the Hagen-Eckesey district has been arranged.

A dividend at the rate of 8½ per cent. on the ordinary shares of the Company is recommended, as against 8 per cent. in the preceding year. The report contains an obituary reference to Herr August Kemper, the late Chief Engineer and Secretary of the Company, whose death, on Aug. 27 last, has already been noticed in the "JOURNAL."

AUCKLAND (N.Z.) GAS COMPANY, LIMITED.

The Annual Meeting of this Company was held on the 3rd ult.—Mr. J. H. UPTON in the chair.

The report presented by the Directors showed that the profits for the past year amounted to £42,458. They recommended a dividend of 8s. 6d. per share for the second half of the year, amounting to £15,331, which, added to the interim dividend (£14,430) paid in July, made a total of £29,761, and left a balance of £12,697. The accounts accompanying the report showed that the sale of gas produced £91,528; residuals returned £19,301; and the total revenue was £118,168. The expenditure on the manufacture of gas came to £50,437 (coals costing £35,371); on distribution, to £8407; and on management, to £6599—the total expenditure being £75,710. The balance on the profit and loss account at the close of the year was £80,794.

The CHAIRMAN, in moving the adoption of the report, said the accounts accompanying it showed that the progress of the Company kept pace with that of the city and suburban districts. The total make of gas for the past year was 444,887,353 cubic feet, which was an increase of 36,916,482 cubic feet, or equal to 9·04 per cent., compared with 1906. The sale of gas had yielded £91,528—a rise of £7717. The residual products had produced £1210 more than in 1906; while the cost of carbonizing showed a decrease of £1566, notwithstanding that more coal had been used. This was owing to the use of the new charging and discharging machinery, though, of course, against it must be set the interest charge on cost, and in future a charge against expenses for repairs, &c. On the whole, however, the introduction of machinery was an advantage in manufacture. The mains had been extended from 202 to 226 miles—an enormous mileage for their population. Only a few months previously the Lake Takapuna district was supplied; and quite recently the installation of a service to Otahuhu was completed. Both these places were supplied on a high-pressure system, and it appeared to work most satisfactorily. In June last, the Directors accepted the resignation of Mr. Chenery Suggate, their late Engineer; and in his place they appointed Mr. James Lowe, Assistant-Engineer and Assistant General Manager to the Glasgow Corporation Gas Department. Mr. Lowe came to them with the highest recommendations as to knowledge and ability; and they had no doubt the appointment would be an excellent one in every way. In the selection of Mr. Lowe, the Directors had the great advantage of the presence in England of their colleague, Professor Brown, who was able to see Mr. Lowe personally, and spend some time with him in Glasgow in his accustomed surroundings. They were much indebted to Professor Brown in this connection, and desired to acknowledge their obligations to him. Mr. Lowe took charge of the works on the 10th of January. The manufacture of gas had for more than a year been carried on altogether at the Beaumont Street works; and the time came when it was necessary to deal with the old site, and to take account of the value of the buildings and plant which had passed out of use. With regard to the site, the Directors had made a satisfactory agreement with the Harbour Board; and an estimate had been prepared as to the original value of the buildings and plant, and a sum of £16,220 was charged to the depreciation account. There was already £10,000 at the credit of this account; and the Directors had now transferred from the undivided profits a further sum of £6220 to balance the debit of £16,220 above referred to. It was well that the capital account of a concern like theirs should be carefully watched; and the Directors were now, on the authority of their esteemed Secretary (Mr. E. B. Parsons), supported by their own investigation of his figures, able to say that the account was correct, and was truly represented by living assets. Reverting to the working in the past year, the Chairman said the balance of profit over the amount required for dividend was £12,697, which was an undeniably good result; and the Directors therefore felt bound, in the interests of consumers and shareholders alike, to consider what they should do. They were working under a sliding-scale, by which the price of gas and the dividend bore a direct relation to each other—consumers and shareholders alike participating in the prosperity or adversity of the Company. The Directors therefore proposed to make a reduction of 3d. per 1000 cubic feet in the price of gas on the south side of the harbour. This reduction would lower the income by £5000 per annum. They recommended an increase of the dividend by 6d. per share each half year, which would absorb £1800. In conclusion, the Chairman, on behalf of the Board, acknowledged the zeal and assiduity of the staff.

The report was adopted.

COLONIAL GAS UNDERTAKINGS.

Reports are now reaching us on the working of Colonial gas undertakings other than those noticed in the "JOURNAL" for the 10th inst.; and we extract from them the following particulars.

The Brisbane Gas Company had a revenue of £24 923 in the six months ending Dec. 31 last; and this was increased to £29,295 by the addition of the balance brought forward. The manufacture of gas, the amount written off for depreciation, and the additions to the reserve and renewal funds absorbed £15,563; leaving a balance of £13,732. The Directors recommended a dividend of 5½ per cent., amounting to £8800; the income-tax came to £440; and there was carried forward £4492. During the half year, the regenerator retort-settings were brought into use; and the Directors have found them so satisfactory that negotiations for an extension of the system have been entered into. The demand for prepayment meters shows a steady increase.

At the annual general meeting of the Maryborough Gas and Coke Company, Limited, the accounts presented showed a revenue of £3077 from the sale of gas, fittings, &c., and of £207 from residuals. With the balance brought forward, a total of £4354 was made up. The expenses of manufacture and distribution, and the payment of the dividend to June, exhausted the whole of this amount with the exception of £1070. This the Directors recommended should be employed in the payment of a dividend at the rate of 6 per cent. per annum, which would require £771, and leave £299 to be carried forward.

The Napier Gas Company, Limited, received last year £19,067 for gas, £6117 for coke, tar, &c., and had a total revenue, including the balance brought forward, of £26,425. They paid £7693 for coal, £6844 for salaries and wages, and £1811 for general purposes; the interim dividend to June came to £3746, and several miscellaneous items brought up the expenditure to £20,995—leaving a balance of £5430. The Directors recommended a further dividend which would absorb £3747, and leave £1683 to the good. The increase of business was well maintained last year, both at Napier and at Hastings; and considerable outlay for new mains and services was necessary. In accordance with a resolution passed by the shareholders, electric lighting plant has been installed.

The accounts presented at the annual meeting of the Wellington (N.Z.) Gas Company showed that the sales of gas, residuals, &c., last year produced £80,678, and the addition of the balance brought forward made a total of £88,666. The manufacture and distribution of gas, repairs and renewals of plant, management, &c., came to £54,411; a sum of £10,000 was placed to the works extension reserve; and £6228 was used in paying an interim dividend of 10s. per share, and £18,027 was carried to the profit and loss account, out of which a further dividend at the above-named rate was recommended. In their report the Directors stated that during the past year 6½ miles of new mains had been laid, and the supply of gas extended to Northland, Melrose, and Hataitai; that an area of 14 acres of land had been purchased at Miramar as a site for new works; and that a tender had been accepted for the supply and erection of a new gasholder. In the course of the twelve months, a sum of £5270 was spent out of revenue on the repair and maintenance of the plant.

Reduction in Price at Skegness.—The accounts submitted at the annual meeting of the Skegness Gas Company showed that there was a balance available for distribution of £1450; and the full statutory dividends were declared. The Directors in their report stated that it had been decided to reduce the price of gas by 3d. per 1000 cubic feet from April 1—thus making the charge 4s.

A VICTORY FOR GAS AT DURHAM.

Lighting of the Workhouse.

A long and lively discussion took place at the monthly meeting of the Durham Board of Guardians some days ago, when the Finance Committee recommended that the workhouse should be lighted by electricity. Only six guardians voted for the recommendation to instal electricity, while twenty-one were opposed to this course.

The proceedings were opened by the Clerk, who said he had been asked to get some information from various institutions that had adopted the electric light in preference to gas, and had received a reply from the Secretary of the Royal Infirmary, Newcastle. The cost of the electric lighting at the infirmary for 1907 was £616. He stated that he believed the electric light to be more convenient and as cheap as gas, if careful supervision was given to switching off the lights when not required; but he thought gas, with modern burners, was a better illuminant than electricity. The cost of the gas was not given in the letter.

The adoption of the Committee's recommendation was then moved by Mr. Holliday, who said that "electricity was much better than the abominable stuff they were at present getting from the Gas Company," as could be seen at Langley Moor. In seconding, the Rev. D. Pughe remarked that he did so from the standpoint of economy and expenditure as far as the ratepayers' money was concerned, and also from the standpoint of hygiene, and consideration for the health of the inmates and cleanliness of the building. At the Committee meeting, he continued, Mr. Coward had given some excellent comparative figures; but he had a very poor case. The electric light cost £75; and allowing £10 for repairs, and £17 for the gas which would be required in the house even if they had electric light, this would make a total of £102. Allowing £10 for interest on the capital invested in wires, &c., made a total of £112. On the other hand, the corresponding estimate for gas was £120 at the very least; and then there were the smoke, dirt, and all the inconvenience associated with it.

The case for gas was opened by Mr. Parkinson, who expressed surprise that any business man should say electric light was economical. At the present time they had 248 burners in the house, giving a candle power of 7656; and the cost for last year was £115, less £17 for gas used for cooking purposes, which brought the total cost of gas lighting to £98. Their electric light friends wished to give them an installation for £212. This £212 was simply an estimated cost; and when they began to put the light into an old building, they often found the real cost exceeded the estimate. Then there was £75 for the current, £10 for upkeep, and £10 for interest on the investment. This made £95 a year, for which they proposed to give them 213 lights with 3040-candle power, as against the 7656-candle power they were at present getting with gas. If the electric light advocates gave them as much candle power as they were now getting with gas, the cost would be nearer £200 a year. Where the economy came in by giving up 7656-candle power for 3040 candles, passed his comprehension. As far as hygiene was concerned, possibly the electric light might be better than gas; but there was another point they must consider, and that was the heat they were getting from the gas in the rooms. If the gas was done away with altogether, they would be called upon to keep more fires going, or even heat the place with water. He put the matter before them as business men; and if they said it was economy to have 3040-candle power instead of 7656 candles, and pull the place to pieces in getting the electric light installed, he failed to see it.

The Rev. D. Pughe pointed out that Mr. Parkinson had said that the total expenditure was £98 for gas. He made an allowance of £10 for the upkeep of electricity, but put down nothing for the upkeep of gas; and he (the speaker) thought £15 would be a very low estimate.

Mr. Coward remarked that the question had been before the Committee; but the members were not unanimous in the matter. They ought to consider well before they undertook an expenditure of £212 for the installation of electric light. As to figures, he would give them the correct ones. Mr. Parkinson's were not correct; while Mr. Pughe was wrong on two points. The cost of gas for last year was really £98 19s. 5d. That was for lighting purposes; and there was £17 for cooking, and for the use of the disinfector. He had ascertained the cost of upkeep for three years. In 1905, 1906, and 1907, the average was £4 12s. 3d. a year, and not £15 as Mr. Pughe thought it might be. This amounted to £103 11s. 8d., for which they had 248 lights and a candle power of 7656. If they turned to electricity, the Company offered to light the place for £75 a year, if the Guardians entered into a contract for seven years. They put the maintenance at £10, and the interest at £10 12s. This amounted to £95 12s., which was £7 19s. 8d. difference in favour of electricity. But with the present system, they had 2½ times as much light as they would have with electricity. If they wanted to deal justly with the two Companies, they must ask for the same candle power with electricity as at present they had with gas; and if the electricity people gave them as much candle power, as Mr. Parkinson had said, it would cost £200 a year to light the workhouse. Mr. Holliday had passed some remarks about the bad gas, and had instanced Langley Moor. The Gas Company were not allowed to put incandescent burners there; otherwise they would have had as good a light as they were now getting with electricity. Looking at the question from a health point of view, there had never been any complaint from the Master, officers, or inmates; and he thought the inmates at Durham Workhouse were as healthy as any. They never died until they were 78 to 90 years of age; and if there were any fumes from the gas or any vitiation of the air, they stood it very well. As to warmth, they got ninety-nine times more heat from gas than electricity. He thought there was more common sense at the Board than to waste £212. If they did adopt the Committee's recommendation, it would be the most extravagant and wasteful piece of business that had ever taken place since he had been on the Board.

Replying on the discussion, Mr. Holliday said Mr. Coward talked about £212; but it was a well-known fact that they would have to spend £200 over the gas-pipes there very soon. How were they to prove that the candle power stated had been given them with gas? They knew it had been very much over-estimated; and he did not think they got 3000-candle power at present. With regard to the question of heat, it was a well-known fact they did get heat from the electric light. He used an electric lamp to read by; and he noticed the heat on his head.

A vote was then taken, with the result, already stated, that the Committee's recommendation was overwhelmingly defeated.

IMPROVED PUBLIC LIGHTING AT RYDE.

Gas Company's Tender Accepted.

At the last Meeting of the Ryde Town Council, the Public Works Committee submitted a tender from the Gas Company for lighting the town, and tenders from the Company and from the Electric Light Company for increasing the lighting of the Western and Eastern Esplanades. The Gas Company's estimate of the cost of the alterations of the latter was £14 12s. 2d., and £32 for maintenance if the increased lighting were continued only during July, August, and September. Their scheme for the Western Esplanade provided for an increase of 2000 candles. The Electric Light Company wrote that the present was not a favourable opportunity for them to embark on an extension which would run into several thousands of pounds; and they therefore very much regretted that they could not tender for the lighting of the whole district. They proposed to supply and erect 16 flame arc lamps of 2000-candle power each, on posts to be supplied and erected by the Council. Six would be lighted all the year round from half-an-hour after sunset to 11.30 p.m., with two 50-candle incandescent lamps in their place from 11.30 till 1 a.m. The remaining ten arc lamps would be lighted for a week at Easter, and from Whitsuntide to the end of September, at similar times to those named above. For the remaining months the incandescent lamps only would be used from half-an-hour after sunset to 1 a.m. They would do this for £245 per annum for five years, or for ten years at £25 less. The Committee recommended that gas should be used for the improved lighting, and specified the positions for the lamps. Mr. Barton, in moving the adoption of the report, submitted the following recommendation: "That the tender of the Ryde Gaslight Company for public street lighting, including gas lighting, extinguishing, cleaning, and repairs, and for lighting the Esplanade and Public Gardens, be accepted for three years, from the 1st of April next, subject to their giving to the Corporation the benefit of any reduction in the price of gas they may make to the public (the Corporation consenting to pay a corresponding extra amount if the price is raised), and subject to a sufficient agreement being entered into; that the Committee be authorized to settle and approve a contract; and that the Mayor be authorized to affix the corporate seal thereto." He said that in the five years ended March 31, 1907, they had paid the Gas Company £7981 6s. 11d.; being an average of £1596 5s. 5d. a year. This included coke for the water-works. In the year 1903, they paid £1025 13s. 10d.; in 1904, £1059 2s. 5d.; and in 1905, £1092 4s. 4d., which included the alteration of the fishtail to incandescent burners. In 1906 they paid £938 18s. 10d.; and in 1907, £920 9s. 2d. Practically, therefore, they were voting for a contract of £1000 per annum. He was very sorry the Electric Light Company could not tender. The cost of the extra lighting would be £35. The lighting of the sea-front, which now cost £97, would then cost £132, and the Electric Light Company wanted £245. Mr. Weeks seconded the motion. Some remarks were made with regard to the position of the lamps; but the Mayor (Alderman Mears) thought the Council would be quite safe in leaving the matter in the hands of the Committee. The report was adopted.

GAS AND ELECTRIC LIGHTING AT NEWPORT (MON.).

An Unfair Reflection upon Gas.

In the course of the proceedings at the last meeting of the Newport (Mon.) Town Council, a discussion took place upon a report of the Electricity and Tramways Committee, and one of the speakers complained of certain electric lamps, and said that he did not see that much was gained by the substitution of them for gas-lamps. Thereupon the Chairman of the Committee replied (as reported) that there would always be a certain number of lamps out, but the report showed that of the total number 63 were electric and 170 gas. Alderman Canning, the Engineer and Manager of the Company, was unable to be present at the meeting, so he replied in a local paper as follows: "I have before me the report which was before the Council, and it says that there were 63 electric lamps and 133 gas-lamps out, not 170. This is the first inaccuracy I desire to correct. By his reply, the Chairman of the Electricity Committee would seem to imply that more gas-lamps were out than electric lamps during the month of January. In proportion to the number of gas-lamps this is not so, but the reverse. The total number of public gas-lamps in the town, exclusive of all dock, railway, and other lamps, is 1012; and the total number of public electric lamps is about 280. Now, during the month of January each set of lamps would have been lighted 31 times. In the case of the gas-lamps, this would mean the lighting of 1012 lamps 31 times, which works out to 31,372 lightings. Of these 31,372 lightings, 133 were failures, being 0·42, or less than one-half, per cent. Turning to the electric-lamps, 280 lighted 31 times equals 8680 lightings, of which 63 were failures, being at the rate of 0·73 per cent.; or, roughly speaking, for every four gas-lamps out there would have been seven electric lamps out if the number of these lamps was equal to that of gas-lamps. I desire to say to the public, as an expert in lighting, that the working of both is good in such a month as January last; and I would never have called attention to the matter had not the statements that have gone forth from the Chairman of the Electricity Committee, who is also Chairman of the Lighting Committee, been calculated to be highly prejudicial to the Gas Company."

ASSOCIATION OF MUNICIPAL CORPORATIONS.

Annual Meeting in London.

The Annual Meeting of the Association was held last Wednesday, at the Guildhall, when there was a large attendance of representatives from both county and non-county boroughs. At the opening of the proceedings, the chair was occupied by the Lord Mayor (Alderman Sir John C. Bell), who proposed the re-election as President of Mr. J. HARMOOD BANNER, M.P., of the Liverpool Corporation.

REPRESENTATION ON THE COUNCIL.

Mr. HARMOOD BANNER having taken the chair, and thanked the Lord Mayor for his welcome, a lengthy discussion took place with reference to what was termed a "disastrous state of affairs" that had arisen in the matter of the election of representatives of county boroughs to serve upon the Council. As a result of the voting, several comparatively small corporations had been among the successful thirty; while both Leeds and Manchester came lower down in the list, and so lost their places on the Council. It was proposed that representatives of these two cities should be invited to attend the Council meetings of the Association during the ensuing twelve months; but ultimately this suggestion was withdrawn, on the understanding that the matter should be brought up for consideration at the next Council meeting.

MUNICIPAL FINANCE AND ACCOUNTS.

The PRESIDENT, in the course of his speech when moving the adoption of the annual report and accounts, said he would like to make a few remarks with regard to the proceedings of the past twelve months, and the prospects of this year. He thought the report would show that they had had a fairly busy year, and also one of very great anxiety, because no municipality could have passed through such a period of financial unrest without experiencing considerable misgivings with regard to the prospects of finding the money with which to meet necessary expenditure. They often heard that it was the action of the municipalities, in conjunction with other things, that had tended to create the present unsettled state of affairs; and this was a misconception which they ought to endeavour to remove. Of course, they had seen the recent attack on Bristol finance, the reasons for which had been cleared away; and only during the past few days there had been a like attack on Wolverhampton, which had also been followed by a removal of any misunderstanding. They were still waiting for some steps to be taken with regard to the question of auditing. The next thing he would like to point out was the enormous value of the sinking funds which the municipalities had compulsorily to provide to write off the cost of their assets. No one else who applied to Parliament was compelled to raise a sinking fund to write off the expenditure in a course of years; and the sinking fund not only wrote off the asset, but also redeemed the debt. They all knew that prudent traders always wrote off considerable depreciation of their assets, when they had profits out of which to do it. But in the case of municipalities, whether there was a profit or a loss, and whether the rates were going up or down, the expenditure which had been incurred had to be redeemed. With regard to many assets—such, for instance, as water-works and schools—the sinking fund wrote off the cost; and yet they remained in the books as revenue-earning assets at the time when the sinking fund expired. As to water-works, many of those which were now being laid down by the authorities would last a long time after the sinking funds had written off their cost in the books. This was a subject worthy of consideration. When attacks were made on municipal finance, it was possible to turn round and say the sinking fund which was prescribed by Parliament—and which was not prescribed in the case of private undertakings—wrote off the cost of these assets. They remained there standing at no cost in the balance-sheet; and they were very valuable assets to meet any indebtedness incurred from time to time by municipalities. The Association had reason to be proud of their action in several respects last year. The measures they brought forward were not measures hastily considered. He thought they were the first body to bring up afforestation; and though it was pointed out that such work as this was not suitable for a Distress Committee, owing to the impossibility of employing on it men who were physically unfit, yet it was recognized that afforestation was a subject well worthy of consideration, and the Government had purchased land in Scotland to carry out a scheme. Then with regard to the Departmental Committee appointed to inquire into the accounts of municipal corporations, the principal feature of the report was the necessity of some statutory form of accounts. At the end of the report, there was the statement that it was desirable that the system of accounts for all local authorities should be prescribed by one central authority, whose power should be wide enough to secure the preparation of accounts on sound and uniform principles. They would, he thought, all be satisfied with such an arrangement, if it were carried out. Uniformity as far as possible certainly should be insisted upon; but complete uniformity was not obtainable. There were many regulations, at present at any rate, which made absolute uniformity impracticable. But still it was possible to a certain extent. The result to the genera credit of the municipalities would be infinitely greater if the accounts were made out on the basis of income and expenditure. All he could say, as Chairman of a Finance Committee, was that he should welcome a uniform system of accounts—a statutory form—and a balance-sheet arranged to show that the assets of the municipalities were real and substantial, that their cost was well written off, and that they provided a good security for municipal loans and bonds or stock when such were issued.

Various other matters were touched upon by the President; and subsequently the report and accounts were adopted. The numerous other items on the *agenda* were then considered.

ASSESSMENT AND RATING.

The TOWN CLERK OF LEEDS moved: "That this Association, being of opinion that there is urgent need for greater uniformity in assessment and rating, observe with satisfaction that it is the intention of the Government, as indicated in the King's Speech, to introduce a Bill for the purpose of amending the system of valuation of property in England and Wales for the assessment of Imperial and local charges, and express the strong hope that the Government will deal with the question at an early date." He said the history of the Valuation Bill was one of delay up to the present time. He thought that there were three principles. First, the principle adopted by the Association had been that valuation authorities should be appointed by councils of local government areas, and not by representatives of Poor Law areas. They regarded this as vital. The question had arisen as to what these local government areas should be; and the Association had expressed the opinion that they ought to include administrative counties and all classes of boroughs. The second principle was that all rates in all classes of boroughs should be collected by the councils of these boroughs, and that the power of Overseers should be vested in the rate-collecting authority. The third principle affirmed by the Association was that provision should be made for a maximum scale of deductions, with a view to securing a more uniform rate of deductions. He therefore added to his resolution clauses embodying these principles.

The MAYOR OF HANLEY seconded the motion; and it was unanimously agreed to.

PRIVATE BILLS OR PROVISIONAL ORDERS.

The TOWN CLERK OF WOLVERHAMPTON moved: "That having regard to the special report (August, 1904) of the Select Committee to whom the Private Bill Legislation Procedure (Wales) Bill was referred, and with a view to providing a less costly system of Private Bill procedure than that now existing, as well as to relieve Parliament of some of its onerous work, this Association affirms the desirability of an extension of the present Provisional Order system, and strongly urges that a respectful request be made to His Majesty's Government to deal with this important subject by legislation as soon as occasion permits." He said his excuse for bringing the resolution forward was that he had done the same thing before, and no action had been taken. The Association had, time and again, affirmed the desirability of carrying into effect the cheapening of Private Bill legislation; and they had also expressed the wish that the Provisional Order system should be extended. At present the Provisional Order system was limited to the amendment or extension of existing Acts; and in asking that it should be made of more general application, he did not refer simply to the Local Government Board Provisional Orders, but also to those issued by other departments. This meant in the first instance a local inquiry by a man of experience; and the matter afterwards went before an expert of still higher authority, and lastly before Parliament for confirmation. It was not intended to take away the right of applying for a Private Bill in cases where such a course might be preferred. He could quite understand the great boroughs of England, who had unlimited resources, and who did not miss hundreds of pounds, liking Private Bill procedure. But in other towns they counted the costs, and if they could get powers in a less expensive way than proceeding by Private Bill, they would prefer to do so.

The proposal having been formally seconded,

The TOWN CLERK OF LIVERPOOL said this was a matter which ought not to be rushed. There were many principles involved; and he thought they should refer the question to the Council for consideration and report. He therefore moved an amendment to this effect. It was true that the Association had passed a resolution on the same lines as the present one; but he thought if the matter was gone into very carefully they would agree that it was not desirable in all cases to apply the Scottish system to England. Whatever the Select Committee did, he was of opinion that they should not that day bind themselves to the resolution. The experience they had had in Liverpool was that local inquiries meant doubling the cost.

The TOWN CLERK OF SALFORD, in seconding the amendment, said they had had some experience of promoting Bills and Provisional Orders; and he was very strongly of opinion—in fact, it went further than opinion—that the Parliamentary Committee of the Salford Corporation were greatly opposed to the idea of promoting Provisional Orders. It had been found in practice that they were more expensive—excepting only where they were entirely unopposed. They had had, for example, to promote a Provisional Order for the purpose of extending their borrowing powers for gas supply. They supplied outside the borough, as no doubt many of the larger towns did; and naturally the councils of the outside areas thought they ought to oppose. They had therefore appeared at the local inquiries; and not content with the protection that had been given them, they had carried their opposition to the Houses of Parliament—very properly, no doubt, according to their own views—and there they had had the whole story over again. This had been Salford's constant experience; and therefore—though he was quite of the opinion of the Town Clerk of Wolverhampton that, if there was a matter upon which there was no great controversy, the Provisional Order system ought to be extended to cover it—he was entirely opposed to the idea that such method of procedure should be forced upon them. That was to say, the matter should be carefully safeguarded so that they might themselves have the right of deciding which method of procedure to adopt, and not be compelled to go for a Provisional Order. The danger contained in the resolution if passed was that they would be in a way expressing the view that the principle of the Provisional Order system should be adopted. If the Town Clerk of Wolverhampton would accept a word which would carefully safeguard the rights of councils to exercise their option, he did not think anything else would be needed. He suggested—"That this Association, without prejudice to the right of any council to exercise the option of promoting a Bill in Parliament, affirm the desirability," &c.

The TOWN CLERK OF PLYMOUTH also thought the matter required further consideration. There were, he said, especially in connection with water supply—which was the most important matter with which municipalities had to deal—many things which the big local bodies would not be content to leave to the inspector of any department, however qualified, able, and experienced he might be. It was suggested most properly that they should do everything they could to limit their expenditure; but did the Provisional Order system do this? In his experience, certainly not. It aggravated the expense enormously; and

a local authority coerced rarely, if ever, accepted the view of the gentleman holding the inquiry, but appealed to Parliament. So that they had a fight locally, and then exactly the same fight in the Houses of Parliament as they would have had if they had gone for a Bill. Therefore, they were not reducing, but adding to, the cost of legislation.

The TOWN CLERK OF SHEFFIELD said he thought the answer to the last few speakers was that they would still have their right to Private Bill procedure, if they cared to adopt it.

Several other speakers having joined in the discussion,

The TOWN CLERK OF WOLVERHAMPTON remarked that the Association had previously passed a resolution on the same lines as his present one, and sent it to the Prime Minister; and he wanted them to pass it again, and not to send up a resolution saying that they did not mean the first one. He was thinking of the boroughs of England who had no money to waste on Private Bill legislation. If Salford wanted a period of eighty years for its gas-works, it was welcome to try for it; but after what Mr. John Burns had said the previous evening at the dinner of the Association, he did not think Salford would get it.

The TOWN CLERK OF SALFORD: I never mentioned eighty years for gas-works, or for anything else.

The amendment was then put to the vote and lost; and the resolution was agreed to.

OPPOSITION TO PRIVATE BILLS.

The DEPUTY-MAYOR OF HERTFORD next moved: "That the very large expenditure falling on boroughs and urban district councils in connection with the opposition to Private Bills before Parliament calls for the serious consideration of all local authorities." He said this bore somewhat on the subject which had just been discussed; but it had reference rather more to the smaller boroughs than to the larger ones, and rather more to opposition to Private Bills than to the promotion of them. He would just point to the experience of his own borough in the past year. Two Bills were introduced by the Metropolitan Water Board which affected the borough; and it was necessary to engage Counsel to oppose throughout the time that they were under discussion. This entailed a considerable expenditure on smaller boroughs; and he hoped it might be possible to find some cheaper way of dealing with the matter than now existed. Co-operation between the smaller authorities with a view to joint action might be practicable; and it was to this end that he brought forward his resolution.

The proposition was carried; and after the transaction of other business, the proceedings concluded with a vote of thanks to the President for his conduct in the chair.

GAS COMPANIES AND IRONMONGERS.

At a recent meeting of the London Ironmongers' Association, one of the members stated that he had had his attention called to the fact that the Brentford Gas Company were about to open show-rooms all over their district; and he had been requested to see the Company's Manager (Mr. A. A. Johnston) on the matter. He said he had had a long conversation with him, and had pointed out how hurtful it would be to all ironmongers if they were going to sell goods at practically what they bought them for; and he suggested that a friendly arrangement should be arrived at. Mr. Johnston replied that the object of his Company was to sell their gas, because they got a profit out of it; but other goods they cared little about. The speaker said he believed he persuaded Mr. Johnston that it would not be at all to the advantage of the gas companies to ruin the ironmongers round them; and Mr. Johnston consented to receive a deputation from the members of the Association carrying on business in the districts affected. He was willing to discuss the subject of so fixing prices that the ironmongers could have a fair and reasonable profit. A deputation was appointed to wait upon Mr. Johnston.

At the same meeting, it was stated that the South Metropolitan Gas Company had forwarded the following particulars of the terms on which they would do business with members of the Association:—

Gas-Fittings.—The Company will pay a commission of 10 per cent. on business introduced through the direct agency of a recognized ironmonger.

Gas Cooking-Stoves, Fires, and Heating Apparatus Generally.—When selling any of the above appliances to customers introduced by the ironmonger, it is understood that the 15 per cent. which has previously been added to the net cost is to be paid to the ironmonger by way of commission on the introduction. When any of the above articles are supplied to the customer on hire-purchase, the cash selling price to be the sum on which commission will be paid.

Gas Cooking-Stoves on Hire.—The Company will pay a commission of 2s. per stove for all cooking-stoves let on hire through the agency of the ironmonger. It is, of course, understood that commission cannot be paid on orders to exchange stoves. The Company will supply to recognized ironmongers a sample gas-cooker on loan for exhibition purposes.

Introductions.—All introductions to be made on the authorized printed forms supplied by the Company for that purpose.

Suffocation by Gas.—At the inquest on the body of Martha Handley, aged 83, of Ilford, medical evidence was to the effect that death was due to suffocation by gas; and the Jury returned a verdict accordingly. A granddaughter stated that she went one morning into deceased's bedroom as usual, and noticed a strong smell of gas. She found that the tap of the gas-bracket (which turned very easily) was on. Her grandmother was dead. Deceased used to turn the gas out herself.

Gas Profits in Aid of Rates.—The Gas Committee of the Bolton Corporation have had under consideration the question of fixing a basis for future contributions in aid of rates out of the profits of the Gas Department. Recently the Council adopted a resolution to the effect that the gas, electricity, and tramways undertakings of the Corporation would in the future be expected to yield an amount not less than 2½ per cent. on the loan capital in aid of rates. The Gas Committee resolved that the Finance Committee should be informed that the amount to be anticipated out of the gas profits in future would be equivalent to 2⅝ per cent. on £700,000, which has been fixed as the value of the works.

NOTES FROM SCOTLAND.

From Our Own Correspondent.

Saturday.

The Edinburgh and Leith Gas Commissioners have resolved to promote a Provisional Order, under the Private Legislation Procedure (Scotland) Act of 1899, or a Bill, as may be determined at Westminster. The powers asked are: For the borrowing of money for the redemption of the annuities which were created by the Commissioners' Act of 1888, or other purposes of the undertaking, the security to be given being the revenues of the Commissioners and the Gas Contingent Guarantee Rate provided by Act of 1888; for an extension of the time for the completion of works at Granton; for the establishment of a superannuation fund for the officials and servants of the Commissioners, the Commissioners to make contributions to the fund, and payments from the fund to take the place of existing allowances, and to be in lieu, or partly in lieu, of retiring allowances granted by the Act of 1888; for prescribing the age for the compulsory retirement of officials and servants of the Commissioners; for altering the illuminating power of the gas supplied, prescribing the method and the places for testing the gas; for freeing the Commissioners from liability to penalty in the event of insufficiency of pressure or illuminating power or impurity, where such are due to circumstances beyond the control of the Commissioners; for extending the area of supply to the parishes of Currie, Ratho, Newton, and Kirkliston; for the charging of differential prices for gas and the giving of discounts; for freeing the Commissioners from liability to penalty in the event of there being insufficiency of supply during alterations, repairs, or extensions of mains; for the making of contributions to the funds of any sick benefit society of the Commissioners' employees; and for the variation or repeal of provisions in existing Acts of Parliament applying to the undertaking.

At the same meeting at which it was agreed to apply for these powers, the Commissioners resolved to take no action with reference to the Coal Mines (Eight Hours) Bill. This result was arrived at on a division upon proposals to take no action and to oppose the Bill; the division resulting in an equality of votes, and the Chairman—Bailie Bryson—declining to exercise his right to a casting vote.

The Commissioners held their annual statutory meeting on Monday—a meeting which is not annual in any sense of the word, but is simply one of the monthly meetings which are regularly held. Almost the only business transacted was consideration of the report of the Works Committee regarding the charges for gas for public lighting, which I gave in these "Notes" last week. The Chairman (Bailie Bryson) moved the recommendation of the Committee—that the prices be, for incandescent lamps, 2s. 6d. per 1000 cubic feet, and for flat-flame burners 2s. 8d. Mr. J. T. R. Wilson, who is Convener of the Cleaning and Lighting Committee of the Edinburgh Town Council, moved that the rates be 2s. 4d. and 2s. 6d. It was, he said, only a few months since the completion of the scheme for the conversion of the flat-flame to incandescent lamps; and he did not think that the price should be raised so soon. Bailie Lindsay, of Leith, moved that the charge for incandescent lighting be 2s. 9d., on the ground that their Engineer had reported that this was practically the cost price of gas to the Commission. He saw no reason why the Corporation should get gas at less than it cost, when the ordinary consumer would have to make good any deficiency which might arise. The Commissioners, as the result of two divisions, adopted the 2s. 6d. and 2s. 8d. prices.

In the Court of Session on Thursday, the proof in the action by Messrs. James Muir and Son, Limited, against the Edinburgh and Leith Gas Commissioners, with reference to the pollution of a well in the pursuers' Calton Hill Brewery, was fixed to proceed before Lord Johnstone on June 23. The well has been cleaned out, and it is being watched to see whether polluted matter continues to come into it. The fortune of the case will depend upon the result of the investigations which will be made between now and the date of the proof. The date has been fixed so as to allow, if possible, of a decision being given before the Court rises for the long vacation; the summer session ending this year on July 18.

The Gas Committee of the Dundee Town Council had before them on Tuesday a report by Mr. A. Yuill, the Engineer and Manager, with reference to the purification plant in the gas-works. Mr. Yuill stated that the plant consists of five sets, giving a purification capacity of 4,300,000 cubic feet of gas per 24 hours; but one set is used exclusively for carburetted water gas, having a purification capacity for coal gas of 3,300,000 cubic feet per 24 hours. The maximum demand in 24 hours in December, 1897, was 2,500,000 cubic feet; while last December it was 4,552,000 cubic feet—an increase of 82 per cent. The purifiers were inadequate for the work required of them; and the ever-increasing demand made it imperative that the plant should be enlarged in the immediate future, so as to obviate any risk or difficulty in maintaining a proper supply to consumers. The cost would be about £15,000. The Committee agreed that Mr. Yuill should proceed with the necessary preparations.

On Thursday night, the family of George Reid, mason, residing in George Street, Lochee, a suburb of Dundee, narrowly escaped from being poisoned by gas. In the evening a strong smell of gas was detected; but as no danger was apprehended, the family retired to rest—Reid considering that the source of the escape would be more easily discovered in daylight. At one o'clock in the morning, however, he was awakened by a sensation of suffocation. The house was filled with fumes of gas. He found one of his children in a state of collapse. A doctor was summoned; and the girl soon recovered. The family were ordered out of the house for the night. In the morning it was discovered that a gas-pipe near the house was leaking—supposed to be due to the action of frost.

In the Falkirk Town Council on Monday, the minutes of the Gas Committee stated that the Gas Manager—Mr. W. Wilson—had reported that he had sent out inquiries for about 3000 tons of coal, and that he had been offered about 1000 tons of quarter, treble, and double nuts, at 7s. 6d. per ton, delivered at the Commissioners' wharf on the canal, alongside the gas-works, and that the Committee agreed to instruct the Manager to accept the offer. Bailie Bogle, the Convener of the Committee, said that 7s. 6d. per ton was a very low figure indeed; the

average price being 10s. 11d. The transaction was homologated. It may be stated that there were very special circumstances in the case of this offer, and that it is not any indication of market prices. An action has been instituted in the Sheriff Court against the Corporation, at the instance of Thomas Malcolm, a lock-keeper, who claims £6 as damages for injury to his garden crops, between March and December, 1907, by noxious fumes or gases escaping from the Corporation gas-works. In the Council, objection was taken to the employment of Counsel to defend the case; the contention being that it was part of the duties of the Town Clerk to conduct all cases in the Sheriff Court. In reply, it was pointed out that the principle involved would affect the whole manufacture of gas throughout Scotland; and that the Committee, in engaging Counsel, had looked to the interest of the town and of the gas undertaking in the matter. The Council, by an overwhelming majority, ratified the action of the Gas Committee.

The members of the St. Nicholas Ward Committee of the Aberdeen Town Council, accompanied by a number of friends, paid a visit to the Corporation gas-works there on the afternoon of Saturday last, on the invitation of the Engineer and Manager—Mr. S. Milne. After having been shown over the works, the Chairman of the Committee expressed the thanks of the visitors to the gentleman who had conducted them round. Mr. Milne, in acknowledgment, thanked the Committee for taking such an intelligent interest in the works. He mentioned that the gas industry was still holding its ground, and more, in Aberdeen. In the period from Aug. 1 last, there had been an increased output of 50 million cubic feet, as compared with an increase of some 34 millions in the corresponding period of the previous year. He attributed the increase to the more extensive use of gas-stoves.

CURRENT SALES OF GAS PRODUCTS.

LIVERPOOL, *March* 21.

Sulphate of Ammonia.

Demand has been well sustained, and again there has been an improvement in values; the closing quotations being £12 2s. 6d. per ton f.o.b. Hull, £12 3s. 9d. to £12 5s. per ton f.o.b. Liverpool, and £12 6s. 3d. per ton f.o.b. Leith. There has been a fair amount of direct business; but the bulk of the buying is still for the purpose of covering contracts made in advance for March shipment. Home demand has also been good at most points. There has been less doing in the forward position, £12 5s. per ton being now required for delivery up to the end of the year; but this is above buyers' ideas. This price is, however, being paid for April delivery.

Nitrate of Soda.

The market is quiet; and spot prices are not over 11s. and 11s. 3d. per cwt. for 95 per cent. and refined qualities respectively.

LONDON, *March* 23.

Tar Products.

All the markets are quiet, with very slight variations in figures, and little business doing. Pitch remains in the same position. There are still sellers at 19s. 6d. on the east coast; but the London and west coast makers are generally firm in their ideas, as they are fairly well sold for prompt. Creosote is quiet and difficult to sell, especially for prompt delivery. Benzols and toluol are unaltered, and small parcels change hands for prompt delivery at existing figures. Solvent naphtha is very quiet; and sellers are reported in London at 10d. per gallon. Carbolic acid is unaltered. Dealers are still offering rather higher prices than Continental consumers will pay. Creosote salts are quiet; and there is decidedly more offering.

The average values during the week were: Tar, 12s. 6d. to 16s. 6d. *ex* works. Pitch, London, 20s. 6d. to 21s.; east coast, 19s. 6d. to 19s. 9d.; west coast, 18s. 9d to 19s. 9d. f.a.s. Benzol, 90 per cent., casks included, London 8½d. to 8⅝d., North 8d.; 50-90 per cent., casks included, London 8¼d. to 8½d., North 8d. Toluol, casks included, London 9½d., North 8½d. Crude naphtha, in bulk, London 3½d. to 4d., North 3¼d. to 3⅜d.; solvent naphtha, casks included, London 10d. to 10¼d.; heavy naphtha, casks included, London 11d. to 11½d., North 10d. to 10⅛d. Creosote, in bulk, London 2¼d. to 2⅜d.; North, 2⅛d. to 2¼d. Heavy oils, in bulk, 2⅜d. to 2⅝d. Carbolic acid, casks included, 60 per cent., east coast 1s. 6⅝d. to 1s. 7d., west coast 1s. 6½d. to 1s. 6⅝d. Naphthalene, £4 10s. to £8 10s.; salts, 37s. 6d. to 40s., packages included and f.o.b. Anthracene, "A" quality, 1½d. to 1⅝d. per unit, packages included and delivered.

Sulphate of Ammonia.

This article is firm for prompt and next month's delivery, and prices are unchanged. The principal London Gas Companies are out of the market, but still quote £12 5s. for forward. Outside London makes have been done at £12 to £12 2s. 6d. on Beckton terms. In Hull, £12 1s. 3d. to £12 2s. 6d. may be taken as the prompt figure; but for forward, £12 is asked. Liverpool is reported to have been sold at £12 2s. 6d. for prompt delivery. In Leith, the price is £12 2s. 6d. to £12 5s.

COAL TRADE REPORTS.

Lancashire Coal Trade.

There is perhaps less demand on the whole for coal than a month ago; but prices show no real change in average quotations at the pits. The quotations are: Best house coal 15s. to 16s. 6d. per ton secondary 14s. to 15s., common 12s. to 13s. 6d., burgy 10s. 6d. to 11s. 4d., best slack 9s. 6d. to 10s. 4d., medium 8s. 6d. to 9s., lower qualities 7s. 9d. to 8s. 4d., coal for shipping 13s. to 14s. 6d. delivered at the tips.

Northern Coal Trade.

There is a good demand in the northern coal trade for this season of the year—more especially in one or two classes which are often slow of sale before the opening of the Baltic. In the steam coal trade, best Northumbrians are steady at from about 12s. 3d. to 12s. 6d. per ton f.o.b., second-class steams are from 11s. to 11s. 3d., and steam smalls are in fuller demand at from about 6s. 9d. to 7s. 6d. Production at the collieries is heavy; but the output is well taken up—the foreign demand being unusually strong for this season. In the gas coal trade, the home consumption now shows some falling off; but the exports are increasing. The prices of Durham gas coals vary from about 10s. 3d. to 11s. 3d. per ton f.o.b. for the usual classes, according to quality; while for "specials" about 12s. per ton is quoted. Contracts reported this week are few, and for small quantities; so that the market is not likely to be affected. Such as are reported are somewhere near the prices above-named as for current sales. It is currently reported that a commencement has been made with the buying for the London gas companies; and for one contract, the price is rumoured as being from 9s. 9d. to 10s. per ton f.o.b. There is, however, no official confirmation of this yet. It would be a considerable reduction from the prices of a year ago. Coke is steady; and gas coke varies from about 17s. to 18s. 6d. per ton f.o.b.

Scotch Coal Trade.

The market shows no sign of improvement; the foreign demand being least strong. Contracts for forward delivery are being made, now that the prices have come down considerably. The fall in prices has had the effect of bringing the coalowners into the position of claiming a reduction of men's wages, to the extent of 12½ per cent. The matter is to be laid before the Conciliation Board. The quotations are: Ell 10s. 3d. to 11s. 3d. per ton f.o.b. Glasgow, splint 11s. 3d. to 11s. 6d., and steam 10s. 6d. to 10s. 9d. The shipments for the week amounted to 230,028 tons—an increase of 13,585 tons upon the previous week, but a decrease of 19,959 tons upon the corresponding week of last year. For the year to date, the total shipments have been 2,255,886 tons—a decrease of 345,751 tons upon the corresponding period of 1907.

The Manchester Gasholder Contract.

"A Manchester Man" has written to the local papers to complain that the contract for the new gasholder, amounting to £52,600, is to be placed (subject to the approval by the City Council of the Gas Committee's recommendation) with an outside firm. He says: "Some time ago discussion took place in the Manchester Press against sending outside the city work that could be carried out just as well, and as satisfactorily, by our own workmen, which discussion seems to have been entirely forgotten, at any rate by our Gas Committee. The wages actually paid in this contract I feel sure will approach half the cost of the work; and when the matter comes before the Council, I hope they will consider the great loss this would be to our citizens. Is it studying the interests of the vast number of our unemployed to give another city a matter of about £20,000 to £22,000 in wages for its workers while there is a probability of our own men being on the streets, with wives and families on the verge of starvation? I understand that Manchester firms were asked to tender for the work, and that their prices are somewhat higher than the one proposed to be accepted. Why is this? There are, at any rate, two main reasons—first, because the workmen in Manchester are better paid than elsewhere; and, secondly, because the rates are higher in our own town. Owing to our workers being better paid and manufacturers being burdened with higher rates, through the short-sighted policy of the Gas Committee, they are now to be robbed of a large amount of wages which goes to a firm paying their workers less, and not having as high rates to pay."

Competition of Gas and Electricity at Burslem.

The Burslem Town Council have agreed to a recommendation of the Electric Lighting Committee, that the Finance Committee be requested to authorize an application to the Local Government Board for sanction to borrow for the longest possible period the sum of £12,000 for the purposes of the electricity undertaking; but the matter was not decided without some very plain speaking on the part of one or two members. Mr. Robinson remarked that the gas and electric lighting concerns were "at each other's throats." They found every endeavour was being made to sell the electric light, and not merely to sell it to people who were not consumers of gas in the town, but to persons who were already consumers of gas. The time had come when there should be a stoppage of this competition, because it was only carried on at the expense of the town at large. Mr. Wade said it was argued that the competition between the two Committees must now be stopped. In his opinion, such a course would be a disaster. It was a healthy spirit of emulation which they wanted between the two Committees, and not unwise competition. They ought to consider to what extent competition might go; but the town would have a much greater loss than the loss from any possible competition, if there was lack of energy and ability in the electric lighting concern. Mr. Johnson (the Chairman of the Gas Committee) very much questioned whether the electric power was being sold at a profit. In the "Electrical Times," he could not find one concern—either a private company or a municipal undertaking—that was producing electricity at anything like ½d. per unit. He believed their Committee were selling it in some cases at ½d., and when they heard members of the Electric Lighting Committee contend that they could make a profit, all he could say was they had either got an exceptionally clever engineer, or those of some of the other undertakings throughout the country were duffers. With respect to the undue competition, he thought it was time there was something done. He believed the gas-works had had to contend with keener competition than would have been the case had the electricity works been owned by a private company.

Street-Box Explosion at Norwich.—Last Wednesday afternoon, in the centre of Norwich, there was a series of explosions, followed by the pouring of an ample supply of water into an electric cable manhole from which huge flames had been rising. The tops of several manholes were blown off; and a woman was knocked down and so injured that she had to be removed to the hospital.

Failure of the London Gas-Mantle Manufacturers, Limited.

The first meeting of creditors interested under this failure was held last Wednesday, at the offices of the Official Receiver (Mr. H. L. Howell), who presided. The statement of affairs disclosed liabilities amounting to £3467, while the net assets were £6650; showing an estimated surplus as regards creditors amounting to £3182. With respect to contributories, however, there was a total deficiency of £2934. The winding-up order was made on the 17th of February last, on the petition of Mr. A. Rottman, a creditor and contributory; and the statement of affairs was lodged by the Secretary (Mr. C. B. James) on the 2nd inst. The Company was incorporated on Jan. 19 last year, under the name of the London Mantle Factory, Limited, with a nominal capital of £1000 in ordinary shares of £1 each, subsequently increased in November last to £12,000, in 6000 ordinary and 6000 preference shares. The Company was promoted by the Block Light Limited and Mr. Jacob Ingot Robin, and was formed for the purpose of carrying on business as manufacturers and dealers in gas mantles, fittings, and apparatus relating thereto. The business appeared to have been started in a comparatively small way at Putney by Mr. Robin, who stated that in May, 1906, when he was carrying on similar businesses in New York and Chicago, he was induced by Block Light Limited to leave America to start a mantle manufacturing factory to be financed by them in London; and in December of the same year, after being in the employ of the Company for some months, and finding that the expectations held out to him were not being realized, he started on his own account at Putney, and was then approached by Block Light Limited to supply that Company exclusively with his output of gas-mantles, on condition that his business should be converted into a limited liability company. This condition was complied with, and an agreement was entered into on Feb. 21, 1907; Block Light Limited undertaking to purchase from the London Mantle Factory, Limited, mantles to the extent of 2½ millions per annum for three years at actual cost *plus* 10 per cent. A separate agreement provided that Mr. Robin should be Manager, at a salary of £500 a year, and receive half the profits. Block Light appeared to have financed the London Mantle Factory, Limited, from its inception to October last. According to the books, the Company were then indebted in a sum of £2260. The parent Company had not complied with the contract to purchase mantles to the minimum number specified; and the agreement was cancelled. The Official Receiver expressed the opinion that the terms upon which Block Light had been released from their contract were neither advantageous to the Mantle Factory Company nor in the best interests of the creditors. At the close of the meeting, two gentlemen were nominated for the position of Liquidator; but as neither could secure the necessary majority, the Official Receiver said the matter would have to be taken to the Court. A Committee of Inspection was appointed.

Halifax Corporation Finances.—The estimates of the Halifax Corporation which have been prepared for the purpose of fixing the rate for the coming year show a loss of £16,209 on the water-works, due to the heavy interest and sinking fund charges brought about by the construction of the new reservoirs at Walshaw Dean. On the other hand, the gas-works show a profit of £11,031, the electricity works a profit of £3804, and the markets a profit of £442.

Manchester Electricity Exhibition.—It appears that the Electricity Exhibition to be held in Manchester in October is to be on a much larger scale than was originally intended; and the question of the erection of a special building on some suitable place has been under consideration. The Manchester Corporation have offered a site in Platt Fields, where the Royal Lancashire Agricultural Society's show will be held in August. It is estimated that the floor-space required for the exhibition will be about 100,000 square feet. The Chairman of the Committee is Councillor Kay, the Deputy-Chairman of the Electricity Committee of the Corporation; and Councillor Barrett, the Chairman of the Electricity Committee of the Salford Corporation, is the Deputy-Chairman.

Aylesbury Gas Company.—At the recent half-yearly general meeting of this Company, the accounts presented for the six months ending Dec. 31 last showed that the revenue amounted to £5963, and the expenditure to £4099; leaving £1864 to go to the profit and loss account. After making provision for interest charges, the balance of profit available for distribution was £1739; and out of it the Directors recommended the declaration of a dividend of 2 per cent. for the half year, less income-tax, on the consolidated ordinary stock, the payment of which would absorb £1200. The Directors expressed regret at the death of the Chairman, Mr. Thomas Parrott, who was unfortunately killed while passing over a railway crossing near Aylesbury. The report was adopted, and Mr. Thomas Horwood was elected Chairman. A hearty vote of thanks was accorded by the Directors and sareholders alike to the Manager (Mr. George Lane, Assoc.M.Inst.C.E.), who has now been with the Company for 31 years, as well as to the Accountant, Mr. J. Paxton Clarkson.

Gas Supply of the City of London.—Professor Vivian B. Lewes, the Gas Examiner to the Corporation of London, in his annual report, just issued, states that the gas supply to the City all last year was of the most satisfactory character. The average minimum illuminating power of the gas at all the stations was half-a-candle above the statutory requirements, which, Professor Lewes says, constitutes a unique record as regards the gas supply of the City. In this connection, reference may, he adds, be made to the work of the Inspector of Gas-Meters. The development of his department is indicated by the increase in the number of meters submitted for testing; the total having advanced in the past five years from 55,198, with fees to the amount of £1805, to 80,703, with fees of £2474. It will be seen that the increase in the number of meters is out of all proportion to the advance in fees; this being accounted for by the large number of meters to be used in connection with cooking by gas which have been submitted. These meters are very small, and for testing them a minimum charge of 6d. is made. Last year the total of this class was 65,603.

Sales of Stocks and Shares.

At the Mart, Tokenhouse Yard, E.C., last Tuesday, Mr. Alfred Richards offered for sale, by order of the Directors, new issues of shares and debenture bonds of the Romford Gas Company, Limited. The first lots consisted of £5 "B" shares, ranking for a standard dividend of 7 per cent. per annum, but carrying 9 per cent. from the 1st prox., and they fetched from £8 7s. 6d. to £8 15s. each. The debenture bonds (£100 at 4 per cent.) were next offered; and they were sold at par. On the same occasion Mr. Richards disposed of some "D" capital water stock of the Barnet District Gas and Water Company (last dividend £5 5s. per cent.) at £112 to £113 per £100; and some "A" and "C" stock at £160 per £100, *cum div.* at the rate of 7½ per cent. per annum. A small quantity of stock of the Horley District Gas Company, ranking for a standard dividend of 10 per cent., and carrying 7½ per cent., was sold at the rate of £140 per £100. On Wednesday, a "B" 13 per cent. £50 share in the Portsea Island Gas Company was sold for £130 10s., and a "C" 12 per cent. £50 share for £126. Some £10 shares in the Portsmouth Water-Works Company fetched £23 15s. each, and some £5 shares of various dividend values realized from £8 7s. to £12 5s. apiece. Tenders for an issue of £2500 of 4½ per cent. cumulative preference shares in the Budleigh Salterton Gas Company were opened last week; and the sums offered considerably exceeded the amount required. In some instances a small premium was offered; but in most cases the price was at par.

Charge for Water by Meter in London.

The Associated London Manufacturers' Committee, representing 330 leading manufacturers consuming water by measure, have sent a protest to the members of the Metropolitan Water Board for the City as to the interpretation placed upon the Board's Charges Act, which comes into operation on the 1st prox. Under the Act, as readers are aware, statutory powers were conferred on the Board to increase their charges to a certain extent; but, in the view of the Committee, the charges proposed to be enforced under the agreements which consumers have been asked to sign are in excess of what can reasonably be demanded in the circumstances of the case, so far as supply by measure is concerned. The objections of the Committee are embodied in the following resolution: "That this Committee protests against the interpretation of the Metropolitan Water Board (Charges) Act, 1907, by the Water Board, and the unduly increased charges resulting therefrom, owing to the application of the combined supply conditions to premises hitherto charged by measure only for all purposes, as shown in copies of agreements which have recently been submitted to the members of this Committee and other manufacturers for their signature." Pending the result of representations which will be addressed to the Water Board through the Committee and the London Chamber of Commerce, it has been suggested that consumers should not, for the present, sign the agreements that have been submitted to them. When speaking last Friday at a dinner at the Trocadero, at which the Lord Mayor and Mr. Sheriff Wakefield were entertained by the County Purposes Committee of the Corporation, the Lord Mayor condemned in strong terms the action of the Water Board in the City. He said that in a building of his he used less than £10 worth of water a year, but he agreed to compromise for £100 a year. This was a ridiculous sum; but now he was asked for £200 a year for nothing. It was impossible for a manufacturer to pay such an exorbitant charge; so he was going to sink a well for himself.

Kansas Water Supplies.—The water supplies of Kansas cities are reviewed in a recent report by Mr. W. C. Hoad, the Engineer of the State Board of Health. He reports that 36 cities, with a total population of 293,000, draw their supplies from rivers and small streams; nine cities, with a total population of 25,000, draw theirs from lakes and ponds; 50 cities, with a total population of 208,000, draw theirs from shallow wells; and 22 cities, with a total population of 72,600, draw theirs from deep wells. In 17 of the cities having surface supplies, no attempt is made to purify the water. In six cities, with a total population of 50,000, the water is subjected to plain sedimentation; in a similar number, with a population of 59,000, sedimentation with coagulation is practised; while in ten, with a total population of 137,000, filtration is carried on. A few of these purification plants are managed in a careful manner; but the report indicates that Mr. Hoad does not put much reliance on the efficacy of purification in most places.

The Water Supply of East Grinstead.—At a recent meeting of East Grinstead ratepayers, a resolution was carried by an overwhelming majority to the effect that, being dissatisfied with the present water supply, they call upon the Urban District Council forthwith to take all necessary steps to secure a supply adequate, not only for domestic and commercial purposes, but for protection from fire. Mr. E. C. Blount, J.P., remarked that the existing supply was inadequate in every way; and in regard to fires, there was a general feeling of insecurity. Mr. P. E. Wallis, Medical Officer of Health, and a Director of the Water Company, referring to an argument that the two offices should not be held by one person "as the positions were conflicting and contradictory," said he refused to be dictated to by anybody as to whether it was right for him to hold the two offices. His only object had been to improve the water supply of the town; and he thought it should be in the hands of the local governing body. He, for one, would be only too glad to wash his hands of the matter. The Company had now managed to give, and were giving, the town a constant supply. He pleaded for time to enable the Directors to perfect their arrangements. Mr. W. V. K. Stenning, J.P., Chairman of the Water Company, rose to explain why the mains were empty for two hours on the occasion of a fire at the Vicarage—which was frequently alluded to during the meeting. He stated that the water was turned on at the works before the hooter finished; but at that time it had been turned off for some hours. He further said the waste of water, which was pumped on to the ruins after the fire, was disgraceful.

Ottoman Gas Company, Limited.—At the meeting of the Company to-day, the Directors will report that the gas-rental for the half year ended the 31st of December last amounted to £16,877, compared with £16,513 for the corresponding period of 1906; and that the net profit was £4845, against £3987. The amount standing at the credit of the profit and loss account is £11,669; and the Directors recommend the payment of a dividend of 7 per cent. per annum on the preference shares, less income-tax, and at a similar rate on the ordinary shares, tax free—leaving a balance of £9070 to be carried forward.

Paignton Water-Works.—At a meeting of the Devon County Council last Thursday, a report was presented by the Dartmoor Preservation Committee with reference to the new storage reservoir which has been constructed on Dartmoor by the Paignton District Council. The report stated that as regards the roads and other works in which the County Council are interested, the work had the appearance of being substantially good, and equal to all present requirements. The water surface of the reservoir is 37 acres, and the drainage area enclosed 740 acres; the depth of water at the overflow being 54 feet. As to compensation water, the District Council have to cause to be discharged during every day not less than 500,000 gallons of water in an even, continuous flow throughout the 24 hours.

Gas Lighting for Westminster Refuges.—The Westminster City Council have had under consideration the fact that accidents caused by collision of vehicles have occurred at unlighted refuges in roadways. The City Engineer (Mr. J. W. Bradley, M.Inst.C.E.) thought that seven refuges at present unlighted should be provided with lamps; and in a report presented at the meeting of the Council last Thursday, the Works Committee remarked that they preferred incandescent gas to incandescent electric lighting for the purpose. The Council agreed to the provision of two-light 18-inch cluster incandescent gas-lamps on each of the seven refuges, at a total first cost (after allowing for three columns in stock) of £62 17s. 6d., and at an annual charge for maintenance of £5 12s. 11d. per lamp, or £39 10s. 5d. for the seven lamps. The tender of the Gaslight and Coke Company for providing, fixing, lighting, and maintaining the lamps was accepted.

Sutton (Surrey) Gas Company.—At the recent half-yearly meeting of this Company, the Directors expressed their pleasure in reporting that, notwithstanding the extreme mildness of the autumn months of last year, an increase in the gas consumption of 2,440,000 cubic feet was recorded compared with the last six months of 1906; and that the revenue derived from the sale of gas and residual products had increased by £1400. The balance available for distribution was £12,455, from which the Directors recommend the payment, under the sliding-scale, of a dividend of £2 17s. 6d. per cent. for the six months, less income-tax; making 5⅞ per cent. for the year ending Dec. 31. The Chairman (Mr. F. Budgen, J.P.), when moving the adoption of the report, remarked that the past year had been a prosperous one, and altogether satisfactory; and the dividend recommended was the full statutory one they were entitled to pay under the sliding-scale. The report was adopted and the dividend declared. At the close of the meeting, the Secretary and Engineer (Mr. G. Mead-Robins) informed the representatives of the Press that the increase in the number of consumers was 308; that they had put on 392 more cooking-stoves, making 3607 in the district; and that there were also 52 additional gas-fires, bringing the present total up to 372.

Ammanford and its Gas-Works.—The following is from the "Cambrian" of last Friday's date: "It was Mr. Abel Thomas, M.P., who said he was glad that Ammanford had got the blessing of a Gas Company. That was when he attended the opening ceremony in connection with the gas-works last November. By the way, Ammanford is still without gas!"

Monte Video Water-Works Company, Limited.—At the meeting of this Company on Thursday, the Directors will report that the number of services increased substantially in the twelve months ending Dec. 31 last; and the revenue account exceeded that of any previous year. The gross receipts amounted to £115,171, and the working expenses to £36,077; leaving the net receipts £79,094. The disposable balance is £78,718; and the Directors propose to appropriate it as follows: In payment of a final dividend of 4 per cent. on £500,000 fully-paid share capital, making a total of 7 per cent. for the year, free of income-tax, £20,000; addition to depreciation fund (raising it to £30,000), £7999; addition to reserve fund (making the aggregate reserve funds £100,000), £15,000; and leaving to be carried forward £35,719.

Gas-Workers' Wages at Pontypridd.—It is stated that an appeal has been made by Mr. Victor Morgan, of the Gas-Workers' Union, to the Pontypridd Trades and Labour Council to oppose the proposed new scale of wages for gas-workers which is under consideration by the Pontypridd Urban District Council. Mr. Morgan explains that the present minimum rate of wages paid to the stokers is 37s. 6d. per week (including Sunday work); and the new scale proposed a minimum of 32s. 6d., and a maximum of 37s. 6d. It was not suggested that the Council intended to reduce the wages of present employees, but to make the new scale operative when fresh hands were engaged. If adopted, it was urged that the new minimum would disturb existing arrangements at all the gas-works in South Wales where the higher figure was now paid. The Trades Council have passed a resolution deprecating the proposed introduction of a lower scale of wages, and urging all organized workers to resist its being carried into effect.

San Paulo Gas Company, Limited.—In the report for the year ending Dec. 31 last which the Directors will present at the annual general meeting of the Company next Monday, they state that the works and plant have been maintained in good order and repair, and that the public lighting of the streets of San Paulo has been carried out to the entire satisfaction of the authorities. The consumption of gas, both for lighting and cooking, continues to increase; and the sales last year were 13·6 per cent. more than in 1906. For the past five years the increase is no less than 66 per cent. These growing demands for gas have necessitated further extensions of the works. During the year a water-gas plant was completed, a contract was entered into for a new gasholder of a million cubic feet capacity, and, in view of the rising value of land, a new site of large area and suitable position for future new works was purchased at a reasonable price. The constant increase of the distributing plant has also involved considerable outlay. The accounts accompanying the report show a disposable balance of £33,602. An interim dividend of 3 per cent., absorbing £7500, was paid on the 26th of September last. After transferring £8000 to the reserve account, the Directors recommend the payment of a final dividend of 5 per cent., free of income-tax, which will absorb £12,500—making a distribution of 8 per cent. for the year, and leaving a balance of £5602 to be carried forward.

GAS COMPANIES' STOCK AND SHARE LIST.

Referred to on p. 756.

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.				£ s. d.
500,000	10	Oct. 11	10½	Alliance & Dublin 10 p.c.	20—21	..	5 0 0
268,324	10	,,	7½	Do. 7 p.c.	14—15	..	5 0 0
310,000	Stk.	Jan. 16	4	Do. 4 p.c. Deb.	100—103	..	3 17 8
200,000	5	Oct. 30	7	Bombay, Ltd.	6¼—6¾	..	5 3 8
40,000	5	,,	7	Do. New, £4 paid	4⅜—5	..	5 12 0
50,000	10	Feb. 27	14	Bourne-mouth Gas and Water	10 p.c.	27—28	.. 5 0 0
					B 7 p.c.	16½—16⅝	.. 4 3 7
					Pref. 6 p.c.	14—15*	.. 4 0 0
51,810	10	,,	7				
53,200	10	,,	6				
380,000	Stk.	,,	12½	Brentford Consolidated	242—247	..	5 1 3
300,000	,,	,,	9½	Do. New	180—185	..	5 2 8
50,000	,,	,,	5	Do. 5 p.c. Pref.	118—123	..	4 1 4
206,250	,,	Dec. 13	4	Do. 4 p.c. Deb.	100—105	..	3 16 2
220,000	Stk.	Mch. 12	11¼	Brighton & Hove Orig.	195—205*	..	5 9 9
246,320	,,	,,	8½	Do. A. Ord. Stk.	152—157*	..	5 5 1
460,000	20	,,	10	British	43—44	..	4 10 11
104,000	Stk.	Feb. 13	6	Bromley, Ord. 5 p.c.	116—119	..	5 0 10
165,700	,,	,,	4½	Do. do. 3½ p.c.	86—89	..	5 1 2
500,000	10	Oct. 11	7	Buenos Ayres (New) Ltd.	11½—12	..	5 16 8
250,000	Stk.	Dec. 13	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
150,000	20	Mch. 12	7½	Cagliari, Ltd.	25—26*	..	5 11 6
100,000	10	—	—	Cape Town & Dis., Ltd.	4—6	..	—
100,000	10	Apl. 26	4½	Do. 4½ p.c Pref.	7—9	..	5 0 0
50,000	50	Nov. 2	6	Do. 6 p.c. 1st Mort.	48—50	..	6 0 0
100,000	Stk.	Dec. 30	4½	Do. 4½ p.c. Deb. Stk.	92—94	..	4 15 9
157,150	Stk.	Feb. 27	5	Chester 5 p.c. Ord.	105½—107½	..	4 13 0
1,493,280	Stk.	Mch. 12	5⅛	Commercial 4 p.c Stk.	103—108*	..	4 16 4
560,000	,,	,,	5	Do. 3½ p.c. do.	100—105*	..	4 15 3
475,000	,,	Dec. 13	3	Do. 3½ p.c. Deb. Stk.	82—84	..	3 11 5
800,000	Stk.	,,	6½	Continental Union, Ltd.	115—120	..	5 8 4
200,000	,,	,,	7	Do. 7 p.c. Pref.	140—145	..	4 16 7
460,170	Stk.	—	5½	Derby Con. Stk.	122—123	..	4 9 5
55,000	,,	—	4	Do. Deb. Stk.	103—105	..	3 16 2
148,995	,,	—	—	East Hull 5 p.c. Ord.	100—103	..	—
486,090	10	Jan. 30	12	European, Ltd.	23—24	..	5 0 0
354,060	10	,,	12	Do. £7 10s. paid	16½—17½	..	5 2 10
15,182,590	Stk.	Feb. 13	4⅛	Gaslight and Coke	4 p.c. Cons. Pref.	95—97	+1 4 10 10
2,600,000	,,	,,	3⅜		3½ p.c. max.	87—89	.. 3 18 8
3,799,735	,,	,,	4		4 p.c. Con. Pref.	106—109	.. 3 13 5
4,193,975	,,	Dec. 13	3		3 p.c. Con. Deb.	83—85	+1 3 10 7
258,740	Stk.	Mch. 12	5	Hastings & St. L. 3½ p.c.		91—96*	.. 5 4 2
82,500	,,	,,	6½	Do. do. 5 p.c.		112—115*	.. 5 13 1
70,000	10	Oct. 11	11	Hongkong & China, Ltd.		19—20	.. 5 10 0
4,940,000	Stk.	Nov. 14	8	Imperial Continental		178—180	—⅛ 4 8 11
473,600	Stk.	Feb. 13	3½	Do. 3½ p.c. Deb. Red.		92—94	.. 3 14 6
195,242	Stk.	Mch. 12	6	Lea Bridge Ord. 5 p.c.		113—118*	.. 5 1 8

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.				£ s. d.
561,000	Stk.	Feb. 27	10	Liverpool United A	220—222	..	4 10 1
718,100	,,	,,	7	Do. B	161½—163½	..	4 5 8
306,083	,,	Dec. 30	4	Do. Deb. Stk.	106—108	..	3 14 1
152,736	Stk.	Feb. 13	7⅛	Maidstone 5 p.c.	136—141	..	5 8 2
75,000	5	Nov. 28	5	Malta & Medn., Ltd.	4¼—4¾	..	5 5 3
560,000	100	Oct. 1	5	Met. of 5 p.c. Deb.	101—103	..	4 17 1
250,000	100	,,	4⅝	Melbourne 4½ p.c. Deb.	10'—103	..	4 7 5
541,920	20	Nov. 14	3½	Monte Video, Ltd.	10¾—11¼	..	6 1 9
1,775,892	Stk.	Feb. 27	4⅝	Newc'tle & G'tesh'd Con.	106½—107½	..	4 6 1
418,463	Stk.	Dec. 31	3½	Do. 3½ p.c. Deb.	87—88	..	3 19 7
15,000	10	Feb. 27	10	North Middlesex 10 p.c.	23—21	..	4 15 3
55,940	10	,,	7	Do. 7 p.c.	13½—14½	..	4 16 7
300,000	Stk.	Nov. 28	8	Oriental, Ltd.	140—143	..	5 11 11
60,000	5	Sept. 13	7	Ottoman, Ltd.	6—6½	..	5 7 8
398,490	5	Oct. 30	7	Primitiva Ord.	6⅞—7¼	..	4 16 7
796,980	5	Jan. 30	5	Do. 5 p.c. Pref.	4⅞—5⅛	..	4 17 7
488,900	100	Dec. 2	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
1,000,000	10	Oct. 11	8	River Plate Ord.	13½—14	..	5 14 4
312,650	Stk.	Dec. 30	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
250,000	10	Sept. 27	8	San Paulo, Ltd.	13⅞—14	+¼	5 14 4
125,000	50	Jan. 2	5	Do. 5 p.c. Deb.	49—51	..	4 18 0
135,000	Stk.	Mch. 12	10	Sheffield A	241—243*	+1	4 2 4
209,984	,,	,,	10	Do. B	241—243*	+1	4 2 4
523,500	,,	,,	10	Do. C	241—243*	+1	4 2 4
70,000	10	Nov. 14	10	South African	14½—15½	..	6 9 0
6,429,895	Stk.	Feb. 13	⅛	South Met., 4 p.c. Ord.	121—123	..	4 6 8
1,895,443	,,	Jan. 16	3	Do. 3 p.c. Deb.	83—85	..	3 10 7
209,820	Stk	Mch. 12	8	South Shields Con. Stk.	150—152*	..	5 5 3
605,000	Stk.	Feb. 27	5⅜	S'th Suburb'n Ord. 5 p.c.	116—119	..	4 9 7
60,000	,,	,,	5	Do. 5 p.c. Pref.	118—121	..	4 2 8
117,058	,,	Jan. 16	5	Do. 5 p.c. Deb. Stk.	120—125	..	4 0 0
502,310	Stk.	Nov. 14	5	Southampton Ord.	107—112	..	4 9 3
120,000	Stk.	Feb. 27	6¾	Tottenham and Edmonton A 5 p.c.		120—125	.. 5 8 0
398,940	,,	,,	5¼	B 3½ p.c.		101—104	.. 5 1 0
149,470	,,	Dec. 13	4	4 p.c. Deb.		59—102	.. 3 18 5
182,380	10	Dec. 30	8	Tuscan, Ltd.		10¼—10⅝	.. 7 8 10
149,900	10	Jan. 2	5	Do. 5 p.c. Deb. Red.		98—100	.. 5 0 0
193,742	Stk.	Feb. 27	5	Tynemouth 5 p.c. max.		105—107	.. 4 13 6
255,636	Stk.	Feb. 13	6¾	Wandsworth and Putney B 3½ p.c.		128—133	.. 4 17 9
80,075	,,	Dec. 30	3	3 p.c. Deb. Stk.		73—78	.. 3 16 11
845,872	,,	Feb. 27	5⅛	West Ham 5 p.c. Ord.		101—104	.. 4 18 6
185,000	,,	,,	5	Do. 5 p.c. Pref.		118—120	.. 4 3 4
228,300	,,	Dec. 30	4	Do. 4 p.c. Deb. Stk.		102—107	.. 3 14 9

Prices marked * are "Ex div."

Gas Workers' Wages Advanced at Bolton.—At their meeting last Friday, the Gas Committee of the Bolton Corporation resolved that the wages of the bridge pipe men, those engaged in connection with the purifiers, and the general labourers at the gas-works, should be advanced from 5d. to 5½d. an hour.

Debate on Gas v. Electricity.—A debate on this subject took place at the Enfield Highway Conservative Club last Wednesday, under the presidency of Mr. R. Palmer. Mr. C. J. Burchall opened with a speech in favour of electricity, and dilated on its convenience, its cleanliness, and its economy. Mr. A. E. Urry, canvasser to the Enfield Gas Company, led for gas, and wholly condemned electricity as expensive, bad from a hygienic point of view, and also on account of its unreliability. He referred to the harmful effect of electric lighting on the eyes in support of his contentions, quoting Dr. Allan Wilson's speech at the Public Health Congress; and he also, at length, controverted the statements as to comparative costs put forward by the opposition.

Water-Meters in Washington.—The introduction of water-meters in Washington (D.C.) is now being carried out at a fairly rapid rate, considering the vigorous opposition which has been raised to their use. In the year 1906-7, 5872 meters were installed at private residences, and were paid for out of the water revenues. The meters are located outside the houses, and are set mainly in the highest part of the district, where it is most important to check waste of water. It is usually customary to charge most of the waste of water in a city to manufacturing plants; yet in Washington which is without such works, the quantity of water required is excessive. Repeated investigation has shown that there is a great amount of waste of water supplied to residences; and the records of draught before and after metering residences will accordingly prove instructive.

Wrexham Gas Company and Profit-Sharing.—When presiding at the meeting of the Wrexham Gas Company, Mr. J. Oswell Bury stated that the Directors had under consideration the question of adopting a profit-sharing scheme for the joint benefit of the employees and the Company, similar to that in force in many other places. When complete, the scheme would be submitted for their approval. He was strongly of opinion that profit-sharing with the employees was a satisfactory move in the direction of bridging over the difficulties existing between Capital and Labour, and creating a better feeling between employers and employed, by giving the workmen an interest in the Company's business; and that the Company would benefit by the greater care which he felt certain would be exercised by the men in the discharge of their duties to secure the best possible results for the Company. The report and balance-sheet for the past year showed that the sum carried to profit and loss account was £5396. New carbonizing plant was installed during the year; and this, together with other items, caused an expenditure of £6869 on capital account. It was further mentioned in the report that there were over 2650 gas-cookers in use, and nearly 3100 prepayment meters. The Directors recommended the payment of a dividend of 5 per cent. per annum.

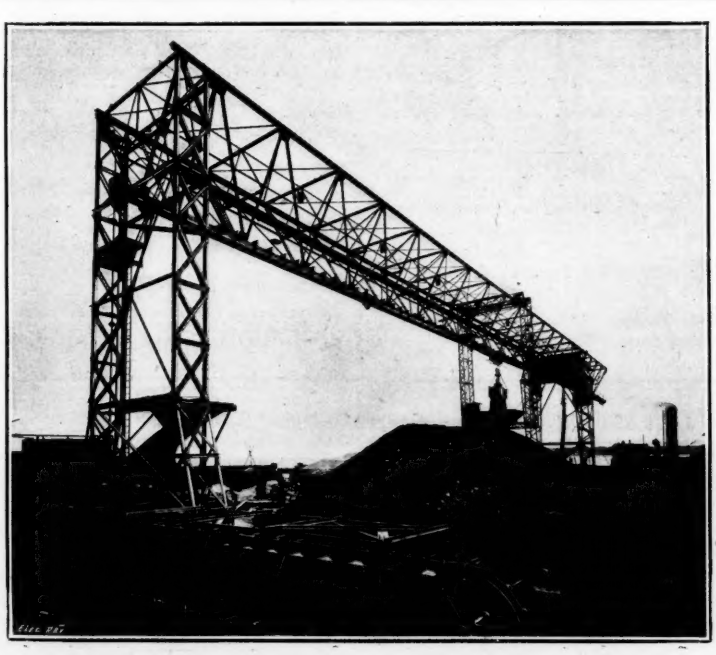
In an article descriptive of the New Humber Motor Works at Coventry, which was published in the "Dundee Advertiser" last week, it was stated that the power station and gas-producer house contains eight gas-engines of 100 B.H.P. each. The engines were supplied by Grice's Gas-Engine Company, of Carnoustie, Forfarshire; and the suction plants are upon their patent double generator system, which allows any of the engines to be run individually from any of the plants, or from all combined.

The Directors of Messrs. Stewarts and Lloyds, Limited, state, in their report for the past year, that the net profit, after setting aside £70,000 for depreciation, amounts to £159 236, to which has to be added the balance brought forward; making together £220,807. After providing for preference dividends and placing to the reserve fund £30,000, the Directors propose to pay a dividend for the half year ended Dec. 31 at the rate of 11 per cent. per annum on the ordinary shares, free of income-tax (making 10 per cent. for the year); leaving £72,807 to be carried forward.

On Sunday, the 15th inst., a district of Lisbon was placed in great peril in consequence of a serious fire which broke out in the Moagens Company's flour-mills, which are stated to be the largest in Portugal. They had a Government powder magazine on one side and the holders at the municipal gas-works on the other; and it was only by almost superhuman efforts that the flames were prevented from reaching either. According to the correspondent of the "Daily Express," who sent the preceding particulars, all the residents in the district fled from their homes; many going into the open country. The loss is estimated at £50,000.

The Abingdon Gaslight and Coke Company, Limited, have placed an order with Messrs. Firth Blakeley, Sons, and Co., of Dewsbury, for some alterations and extensions to be carried out under the supervision of Mr. S. Crossland, their Engineer and Manager. These consist of retort benches and settings, on their improved regenerative principle, with new ironwork. A set of four annular condensers are also to be supplied, 36 inches diameter, a Cripps patent washer and tar-extractor, and cast-iron tower scrubber, 6 feet diameter by 40 feet high, with spiral staircase, balcony, &c., together with all connections for coupling-up the several parts of the plant.

At the Canton Branch Library, last Tuesday, Mr. C. H. Priestley, the Cardiff Water Engineer, gave a lecture (illustrated by lantern slides) in which he dealt exhaustively with the town's supply. At its conclusion, Councillor Seccombe, in proposing a vote of thanks to Mr. Priestley, said that the water supply of Cardiff now almost paid for itself; and next year they looked forward to its being a paying concern. Of course, they would have to get support from the rates for the new reservoir; but eventually this increased supply again would pay for itself. There was not a place in Great Britain where the water supply was purer, more wholesome, and more desirable than at Cardiff. He paid a tribute to the genius and skill of the late Alderman D. Jones in his efforts on behalf of the Cardiff water supply.



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